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**THE TRANSLATION OF PHARMACEUTICAL TEXTS:  
A FUNCTIONAL CASE STUDY ON KATZUNG & TREVOR'S  
TEXTBOOK OF PHARMACOLOGY**

Esra ŞENGÜL

Yüksek Lisans Tezi

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A FUNCTIONAL CASE STUDY ON KATZUNG & TREVOR'S TEXTBOOK OF  
PHARMACOLOGY



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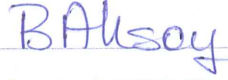
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Esra Şengül tarafından hazırlanan "*The Translation of Pharmaceutical Texts: A Functional Case Study on Katzung & Trevor's Textbook of Pharmacology*" başlıklı bu çalışma, 20.06.2018 tarihinde yapılan savunma sınavı sonucunda başarılı bulunarak jürimiz tarafından Yüksek Lisans Tezi olarak kabul edilmiştir.



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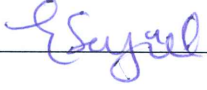
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☐ **Serbest Seçenek/Yazarın Seçimi**

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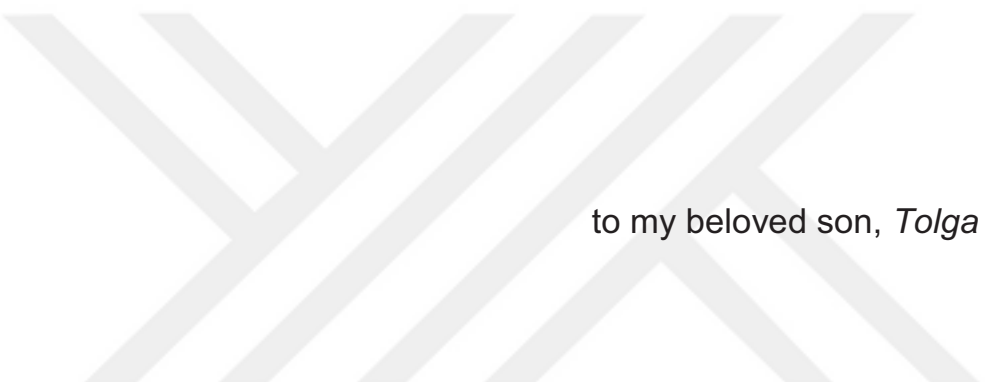


**Esra ŞENGÜL**

## ETİK BEYAN

Bu alıřmadaki bütn bilgi ve belgeleri akademik kurallar erevesinde elde ettiđimi, grsel, iřitsel ve yazılı tm bilgi ve sonuları bilimsel ahlak kurallarına uygun olarak sunduđumu, kullandığım verilerde herhangi bir tahrifat yapmadığımı, yararlandığım kaynaklara bilimsel normlara uygun olarak atıfta bulunduđumu, tezimin kaynak gsterilen durumlar dıřında zgn olduđunu, Tez Danıřmanının **Prof. Dr. Asalet ERTEN** danıřmanlıđında tarafımdan retildiđini ve Hacettepe niversitesi Sosyal Bilimler Enstits Tez Yazım Ynergesine gre yazıldıđını beyan ederim.

**đr. Gr. Esra řENGL**



to my beloved son, *Tolga Şengül...*

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## ÖZET

*ŞENGÜL, Esra. Farmakoloji Metinlerinin Çevirisi: Katzung ve Trevor'ın Farmakoloji Kitabına Yönelik İşlevsel Bir Durum Çalışması, Yüksek Lisans Tezi, Ankara, 2018.*

Var olan tüm eylemlerin bir amaçtan kaynaklandığı her bilim dalı tarafından sorgulanmaktadır. Benzer şekilde çeviribilim alanında da diller arası aktarımın bir amaca dayandığı 1980'li yıllarda Holz-Mänttari tarafından öne sürülmüştür. Çeviri açısından bakıldığında, belirli bir amaç doğrultusunda üretilen her tür metin Çeviriye İlişkin Eylem Kuramı'nın bir parçası olur (Yazıcı, 2005: 53) Çeviride Skopos Kuramını ortaya atan Hans J. Vermeer, her çeviri eyleminin bir Skoposu diğer bir deyişle bir amacı olduğunu belirtir (1996: 12). Bu çalışma, farmakoloji alanında Tıp ve Eczacılık Fakülteleri'nin temel yapı taşlarından biri haline gelen *Katzung ve Trevor Farmakoloji Sınav ve Gözden Geçirme* başlıklı kitabın çevirisini skopos çerçevesinde incelemeyi amaçlamaktadır. *Katzung ve Trevor Farmakoloji Sınav ve Gözden Geçirme* ülkemizde önemi büyük olan ve çalışmalarının merkezinde insanı bulundurduğu için üzerinde düşünülmesi gerekli olan iki alanda (Tıp ve Eczacılık) sıklıkla ve çoğu kez tek kullanılan ders kitabı olduğu için üzerinde durulmaya değer olmaktadır.

Bu çalışmada öncelikle farmakoloji alanında geçmişten günümüze uzanan yöntemler ve gelişmeler incelenmiş, bu alanın ülkemizde kat ettiği yola değinilmiştir. Ardından, çeviribilimde işlevsel bakış açısıyla ilgili çalışmalar ve Skopos kuramının gelişimi, kapsamı, temel yapıtaşları ve bu kurama yönelik eleştiriler açıklanmıştır. Son olarak, farmakoloji alanda kapsamlı bir kaynak olan *Katzung ve Trevor Farmakoloji Sınav ve Gözden Geçirme* kitabının Türkçe çevirisi *skopos, bağdaşıklık ve sadakat* kuralları çerçevesinde incelenerek bu çevirinin hedef dildeki işlevleri açıklanmıştır.

### Anahtar Sözcükler

Skopos, Eylem Kuramı, Çevirmenin Kararı, Çevirinin İşlevi, Hans J. Vermeer'in Hiyerarşik Düzeni, Bağdaşıklık Kuralı, Sadakat Kuralı, Tıp, Farmakoloji, Katzung ve Trevor

## ABSTRACT

ŞENGÜL Esra. *The Translation of Pharmaceutical Texts: A Functional Case Study on Katzung & Trevor's Textbook of Pharmacology, Master's Thesis, Ankara, 2018.*

All fields of science question the same thing: Do all the actions take place for a reason? Similarly, in the field of translation studies, in the 1980s Holz-Mänttari proposed that translingual practices are based on an aim. In terms of translation studies, all kinds of texts that are built on the foundation of an aim turns into a part of Action Theory (Yazıcı, 2005: 53). Hans J. Vermeer who introduced the Skopos Theory in the field of Translation states that all translation actions has a Skopos, i.e. a purpose (1996:12). In this study, it is aimed at focusing on the Skopos of the translation of the book entitled *Katzung and Trevor's Pharmacology Examination and Board Review* which is used as a textbook and has become an indispensable part of the Faculty of Medicine and Pharmacology. It is worth contemplating on this book due to the fact that it is the most popular and mostly the only textbook that is read and studied in the most significant two fields dealing with human health: Medicine and Pharmacology.

First of all, the thesis studies the methods and developments in pharmacology that have been observed from the past to the present, and the developments in Turkey related to this field are referred. Then, the studies on functional theories in translation and the development, the scope, and the basic principles of *Skopos* theory as well as criticisms against the theory are explained. Lastly, Turkish translation of *Katzung and Trevor Pharmacology Examination and Board Review* which is a comprehensive source in the field of pharmacology is analysed in the framework of *skopos*, *coherence* and *fidelity* rules, and the functions of the translation in the source language are analyzed.

### Key Words

Skopos Theory, Action Theory, Decision of the Translator, Function Of The Translation, Hans J. Vermeer's Hierarchical Order, Coherence Rule, Fidelity Rule, Medicine, Pharmacology, Katzung and Trevor

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## LIST OF ABBREVIATIONS

**ST:** Source Text

**TT:** Target Text

**SL:** Source Language

**TL:** Target Language



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## INTRODUCTION

Many improvements in the field of science and technology require rapid and accurate transfer of information in order to provide scientists with the recent studies and up-to-date research. Advances in all branches that are related to science and technology are built upon this continuous transfer of data. A scientist who studies and writes in one language needs to know about the works, ideas and arguments of another scientist in the other languages (Erten, 1997:17). Therefore, the great demand for technical translation has persisted all around the world since the ancient times and the translator has played a role between cultures and languages by transferring the information.

Technical translation encompasses different kinds of specialized areas. Two of these areas are medicine and pharmacology. As it is the case for translation of text types, translation of pharmacological texts requires the analysis of the informative text type and a proper jargon. These aspects bring the issue of fidelity, differences between language patterns and the gap between references along with the translator's essential areas of expertise, field of knowledge and research skills to the foreground. Keeping all these concepts in mind, translation process is conducted using translation strategies and methods which are negotiated and performed before the process begins and which has a specific purpose and an outcome (Vermeer, 2000:221).

Despite all the challenges of technical translation, transferring any specialized knowledge accurately could be possible. According to Montalt and Davies, accurate translation of a medical text lies in creating medical terms with linguistic procedures in the specific historical and cultural conditions (2014: 230). Historical and cultural conditions need to be founded on a structure where terminology of a specific field and all the linguistic elements are strengthened. These specific conditions along with the other motives define the skopos of the translation. Not only the text type and communicative features contribute to the

development of the TT, but also the function that the recipient requires shapes it.

To achieve the aim, the translator tries to produce the desired TT following the most applicable translation approaches. Since the skopos of translation of each text differs from one another, "the extent to which the translator reach success could be determined by whether it is interpreted by the target recipient in a way which is coherent with his or her situation and whether or not it leads to any kind of protest against its meaning or form" (Reiss and Vermeer, 1948:112).

As it is understood, a TT could be said to fulfil its aim in the source culture only when it serves the aim of the process and is coherent with the receiver's situation.

When it comes to translation of medical and pharmacological texts, it can be said that it is one of the most crucial translation processes. As a sub-field of medical texts, pharmacological texts include drug compositions, mechanisms of drug actions, therapeutic use of drugs (Montalt and Davies, 2014: 20). Translating a pharmacological text accurately and in a standardized format is essential because it deals with human health. Accordingly, "the translator's priority is to deal adequately with factual complexity and accuracy" (Montalt and Davies, 2014: 20). In this respect, the issue of language and communication in translation gains great importance.

As it is clear, general translation theories can be applied to the translation of medical and pharmacological texts. According to Lee-Jahnke:

"Another theory applicable to medicine is the "skopos" theory developed by Reiss & Vermeer (1991: 96), which implies that any translation must first of all serve the objective of the original text, no matter how that goal is approached. We learn here that the text should be translated in a receiver-specific way. Hence it is not only a different language or culture which has to be taken into consideration, but also the different degree/level of knowledge of the recipient. This indicates that there may be several skopoi (Greek for goal, target, aim) for one and the same text—thereby requiring a

hierarchical arrangement. Thus it cannot be ruled out that the aim of the target text differs from the aim of the original source text (Reiss and Vermeer 1991: 103). For Reiss and Vermeer, it is the recipient who must be the primary consideration. But aside from this, one must bear in mind the type of text, the species and the different conventions of the target text (1998:81)."

Therefore, skopos of a translation determines the need of acquiring a ST with consistent terminology and new terms with their definitions, that shapes the TT.

In his book entitled *A Skopos Theory of Translation*, Vermeer states that "A text is produced as a result of a certain and short-term aim (*German: Zweck*) or a general, and also long-term purpose (*German: Ziel*)."

(Vermeer, 2008: 4.)

Accordingly, the purpose of this study is to present to what extent the Skopos of translation of pharmacological texts has an effect on the TT. Jawad Kadhim Jabir, a lecturer at the College of Arts, University of Basrah, states that final result is tried to be achieved by action; however, a purpose can be defined as a stage of the process of fulfilling an aim (2006:2). Therefore, this thesis will focus on the necessity of the translation of pharmacological books in Turkey and it will examine *Katzung and Trevor's Pharmacology Examination and Board Review*, one of the most well-known pharmacology books that is used in medical and pharmacology faculties, to determine whether *Katzung and Trevor's Pharmacology Examination and Board Review* was translated into Turkish to achieve a specific purpose.

The textbook *Katzung and Trevor's Pharmacology Examination and Board Review* which has been chosen to be analysed in this thesis is regarded as the fundamental book in the field of medicine and pharmacology. It was first published in 1990 by Appleton and Lange Medical Publication. Its sixth edition was published in 2002 by McGraw-Hill Medical Publishing Division. The authors of the book are Anthony J. Trevor, Professor of Pharmacology and Toxicology, Bertram G. Katzung, Professor of Pharmacology, Susan B. Masters, Associate Professor of Pharmacology at the University of California, San Francisco.

Turkish translation of *Katzung and Trevor's Pharmacology Examination and Board Review* which is analysed in this study is the sixth edition that was published in 2002 by Nobel Tıp Kitabevleri. Translators of the book are Prof. Dr. A. Gökhan Akkan, Prof. Dr. Sibel Özyangan, Dr. Gülay Öner Özgön, Dr. Nilüfer Kutluata, Dr. Korkut Kutluata, and Dr. Selim Afşar. Translation editors of the book are also Prof. Dr. A. Gökhan Akkan, Dr. Sibel Özyangan, Dr. Gülay Öner Özgön, Dr. Nilüfer Kutluata and Dr. Selim Afşar. The translators and translation editors of the book are doctors of medicine and the experts in the field of medicine and pharmacology. Prof. Dr. A. Gökhan Akkan and Prof. Dr. Sibel Özyangan is specialized in pharmacology and clinical pharmacology. Dr. Gülay Öner Özgön is specialized in medical genetics and medical pharmacology. Similarly, Dr. Nilüfer Kutluata, Dr. Korkut Kutluata, and Dr. Selim Afşar are specialized in pharmacology.

*Katzung and Trevor's Pharmacology* is still used at different faculties of medicine and pharmacology in the world, including Turkey. Further information about the textbook and its features will be presented and whether it has a specific purpose in target culture will be analysed in the third chapter.

This study is limited to the analysis of the sixth edition of *Katzung and Trevor's Pharmacology Examination and Board Review* and its translation into Turkish under Vermeer's skopos, coherence and fidelity rules and the research questions raised in this thesis are as follows:

1. Within the framework of technical translation, what kind of factors play a role in shaping the translation process and providing a functional TT?
2. What is the role of Skopos Theory in the translation of pharmacological texts?
3. How does the purpose and the reason of a specific book chosen and translated contribute to the training of students at medical and pharmacology faculties?

Lastly, this study mainly consists of three chapters. In the first chapter, the definition, the scope and the history of pharmacology are explained in detail. Moreover, the characteristics and the language of pharmacological texts are discussed. In the second chapter, the Skopos theory of translation is introduced. Background of the theory, principles and rules of the theory, and criticisms directed to the theory are attempted to be explained. In the third chapter, the textbook, *Katzung and Trevor's Pharmacology Examination and Board Review* has been introduced in detail and it is analysed within the framework of skopos, coherence and fidelity rules to find out whether the book was chosen on purpose both to be used as a course book in pharmacology and medicine classes and also to serve as a source for board and national examinations.



# 1. CHAPTER

## PHARMACOLOGY

### 1.1. THE DEFINITION OF PHARMACOLOGY

The word "*pharmacology*" is originated from the Greek word combinations of *pharmacon* and *logos*. *Pharmacon*, which is also known as *pharmacos*, is a word that means medicine and remedy and *logos* means study of knowledge in ancient Greek. As a branch of medicine and biology, pharmacology is concerned with the science of drugs. Pharmacological studies are limited to drugs; however, "it encompasses all aspects of knowledge about drugs, but most importantly those that are relevant to effective and safe use for medical purposes" (Tripathi, 2003:3).

Drug is a chemical agent that has an interaction with specific target molecules causing a biological effect. In general sense, pharmacology deals with properties and effects of drugs and their interaction of chemical compounds with living organisms. It is also said that pharmacology is a science which is based on experiments and aims at scrutinizing changes occurred in the living organisms as chemically acting substances apart from foods, whether used for treatment or not. Therefore; pharmacology can be defined as follows:

Pharmacology is one of the cornerstones of the drug discovery process. The medicinal chemist may create the candidate compound, but the pharmacologist is the one who tests it for physiologic activity. A promising compound is investigated by many other scientists—toxicologists, microbiologists, clinicians—but only after the pharmacologist has documented a potential therapeutic effect (Scheindlin, 2001:87)

It can be inferred from this statement that pharmacology is a discipline that forms the backbone of medicine since drugs are essential for treatments of human diseases and a pharmacologist is an expert that plays an important role in drug formulation and discovery.

## 1.2. THE SCOPE OF PHARMACOLOGY

Pharmacology is the one and the only field that studies the components, functions and effects of drugs. When pharmacologists try to find a remedy and develop new drugs, they focus on "desired activity, determine mode of action, and quantify drug activity when chemical methods are not available" (Scheindlin, 2001:87). They also want to know how a drug works. For example,

Amoxicillin cures a strep throat, and cimetidine promotes the healing of duodenal ulcers. Pharmacology asks "How"? Amoxicillin inhibits the synthesis of cell wall mucopeptide by the bacteria that cause the infection, and cimetidine inhibits gastric acid secretion by its antagonist action on histamine H<sub>2</sub> receptors (Scheindlin, 2001:87).

In this way, they find out how and why a drug becomes useful and serves the purpose. The ways in which drugs are modified within living organisms are also identified by pharmacologists.

## 1.3. DIFFERENCES BETWEEN PHARMACOLOGY AND PHARMACY

There is a common confusion that pharmacy is thought to be the same field of study as pharmacology. Both fields are studied by professionals who are experts of drug therapy principles and whose aim is to improve the treatments for patients' benefits. But, there are certain differences (Golocorbin-Kon et al., 2009:33). Indeed, pharmacology is a completely separate profession related to the preparation, introduction and use of medications. It is generally connected to academic departments that are responsible for research and teaching. On the other hand, pharmacy is a profession and a part of health care service and information systems (<http://www.pharmacology.med.umn.edu/whatispharm.html>). The difference can also be identified with pharmacology being a scientific discipline while pharmacy includes techniques of preparing and dispensing drugs and medicines in hospitals. It also provides the safe usage of them.

#### 1.4. SUBDIVISIONS OF PHARMACOLOGY

Pharmacology is the study of the "ical agents of therapeutic value or with the potential toxicity on biological systems. It includes two closely associated areas: pharmacodynamics and pharmacokinetics" (<https://www.aspet.org/knowledge/what-is-pharmacology/>). Pharmacodynamics includes the studies of molecular, biochemical, and physiological impacts of drugs on cellular systems and their mechanisms. Pharmacokinetics deals with the absorption, distribution, and excretion of drugs. Pharmacodynamic and pharmacokinetic aspects of action of chemical agents also apply to related areas of study, including toxicology and therapeutics.

Except these two main fields, the pharmacological sciences can be subdivided into the following areas of research and education: "behavioral pharmacology, cardiovascular pharmacology, biochemical and cellular pharmacology, chemotherapy, clinical pharmacology, drug discovery, drug development, and regulatory affairs, drug metabolism and disposition, endocrine pharmacology, neuropharmacology, molecular pharmacology, pharmacology education, systems and integrative pharmacology, toxicology, therapeutics, veterinary pharmacology" (<https://www.aspet.org/knowledge/what-is-pharmacology/>).

## **1.5. THE HISTORY OF PHARMACOLOGY**

### **1.5.1. The History of Pharmacology in the World**

#### **1.5.1.1. Ancient Times**

It has always been difficult to find precise information about the origin of pharmacology as a scientific profession. However, it is beyond dispute that pharmacology is as old as the history of mankind. As Baytop states that pharmacology goes back to cures of sorcerers in the primitive age (1985:5). People in the past had the ability of charming using herbs, roots, and other substances. It is anticipated that most of these materials had medicinal properties and could cure people (Sibly, 1795: 1120). As well as their inevitable interventions in events and illnesses, sorcerers revealed the benefits of herbs and plants either by accident or by evidence. Since people used to believe that evil or natural phenomena cause diseases to punish them for their deeds, they used herbs with magic at first until it become common in public.

According to Morris Silber, it was not until rapid socioeconomic change that developments in pharmacology occurred. In primitive societies, people found out curable features of plants accidentally by observing the behaviour of animals. Silber indicates that this period in pharmacology is called the empirical period. After the empirical period, the empirical-mystical period started. In this period, clergymen was privileged to cure because healing was thought to be divine. At times, developments in pharmacology and medicine came to a stop in the feudal period, but monks continued to deal with medicine. In this period, the effects of medicine were thought to be related to astrology and they acted under the guidance of the movement and the position of the planets, constellations and the moon. This period is called the religious-scholastic period in pharmacology. (<http://www.adaptogens.org/original/research/pharma/Pharmacology002.html>)

When it comes to the concept of '*drug*', it is noted that this concept emerged when the data about curing herbs increased and people began to use them to heal illnesses. (Baytop, 1985:5). Mastic, tragacanth and manna were the first drugs that were used by people.

Mastic which is one of the first drugs and commonly found in Mediterranean Europe, Morocco and Iberian peninsula and in the west through southern France, Turkey, Iraq, Iran and the Canary Island has a great medicinal value and has been used in traditional medicines like Unani and Ayurveda system. Although mastic is originally liquid, it becomes hard, brittle, and translucent when it is dried under the sun. When it is chewed, the resin softens and becomes bright white and opaque gum. There are various useful major chemical constituents found in mastic. For example, essential oil is obtained from the leaves, and twigs through steam distillation and gum is effective against bacteria. It also shows in vitro antimicrobial and antifungal activity. Furthermore, mastic which has natural antioxidants scavenge harmful free radicals from our body. Mastic is also recorded as antiatherogenic, antimicrobial, antioxidant, lipid lowering, hepatoprotective, antiarthritic and antigout, wound healer and anticancer (Nahida et al., 2012: 16-20) Additionally, in Greece and other Balkan countries, mastic resin is widely used and sold in pharmacies especially after '80s for the healing power on gastrointestinal disorders, skin problems, and also for mouth hygiene (European Medicines Agency, 2015:8).

Tragacanth, on the other hand, is a naturally occurring dried gum which consists of a mixture of water-soluble poly-saccharides. "It is obtained from *Astragalus gummifer* Labillardiere and other species of *Astragalus*. Tragacanth gum is used as an emulsifying and suspending agent in various pharmaceutical formulations" (Rajiya Begum et al., 2012: 426) According Gavlighi et al., tragacanth gum can be a new source for development of innovative functional foods with health claims (2013:6).

Manna which is also natural substance obtained as a byproduct of the activity of insects on young host plant organs is a group of natural compounds with medicinal and nutritional benefits. Therefore, it was used as drug in ancient times. Manna which is called 'Angabin' in Persian language have been used in Iranian folk medicine as laxatives, antipyretics and expectorant and to treat hyperbilirubinemia. The most commonly use of this manna is for relief of jaundice in newborns. The manna is indicated to be good sources of mineral essential elements and can be useful to treat various efficiency disorders as well as containing medicinal property. It is recommended for people suffering from leukemia, ulcerative colitis, in bleeding disorders, in immune system disruption or blood loss. It can also be beneficial when a person suffers from reduced number of white blood cells or lowered immunity conditions (Yazdanparats et al.,2014:1025) .

The oldest sources concerning drugs are found in the Sumerian tablets. These tablets are ascertained to be written around 3.000 B.C. Chinese, Arabian, Indian and Persian manuscripts followed these primary tablets. The most striking pharmaceutical feature of these tablets and manuscripts was that the drugs which had been described in these sources can still be found and sold in drugstores to cure illnesses. (Baytop, 1985:6).

The pharmacological sources like *Vademecum* which is widely used at present in many hospitals, doctor's offices and drugstores are highly comprehensive in terms of explaining dosages, side effects, etc. Nevertheless, the basis of pharmacology in the ancient times only concentrated on the introduction of drugs and simple preparations unlike today.

### 1.5.1.2. Chinese Pharmacology

Traditional Chinese medicine is based on a tradition of about 5,000 years. It is a well-known method which is used both in China and around the world. Massage (Tui na), exercise (qigong), herbal medicine, acupuncture, and diet are the main parts of Traditional Chinese medicine. Traditional Chinese pharmacology is also an essential part of traditional Chinese medicine. Traditional Chinese pharmacology focuses on the history and origin of traditional Chinese drugs as well as their collection, processing and uses.

According to *Chinese Foreign Language Press*, traditional Chinese drugs contain very rich resources. It is stated by Foreign Language Press that there are 12,807 traditional Chinese drugs and 11,146 of them are of plant origin; the others are of mineral or animal origin. (<http://www.china.org.cn/english/MATERIAL/185685.htm>) Therefore, traditional Chinese pharmacology is also called traditional Chinese herbal pharmacology.



Fig.1. Shennong while brewing herbal tea.

(*The history of tea*; [http://www.china.org.cn/learning\\_chinese/Chinese\\_tea/2011-07/15/content\\_22999489.htm](http://www.china.org.cn/learning_chinese/Chinese_tea/2011-07/15/content_22999489.htm). Accessed Jul. 2017.)

A legend in China says that 5,000 years ago an emperor called Shennong (shen means god; nong means agriculture) contributed a lot to the development of drugs. Shennong is thought to live from 2737 B.C. to 2697 B.C., about 5,000 years ago and he discovered numerous plants which have pharmacological effects. Therefore, the first classical work on Chinese materia medica was named after Shennong's Herbal Classic (Shen Nong Ben Cao Jing). Compilation of his source goes back to 1,800 years backwards and it contains details of 365 drugs. (<http://www.china.org.cn/english/MATERIAL/185685.htm>)



Fig. 2. "Four chapters from the original Shennong herbal was used by Tao Hongjing (456-536 A.D.) to produce the Shennong Bencao Jing" (published around 500 A.D.).

(Dharmananda, Subhuti, "The Lessons of Shennong The Basis Of Chinese Herb Medicine." <http://www.itmonline.org/arts/shennong.htm>. Accessed Jul. 2017.)



Fig. 3. "An artifact at the Shanghai Museum from about 800-900 B.C. found in the area where Shennong is believed to have lived" (Fufeng County, Shaanxi).

(Dharmananda, Subhuti, "The Lessons of Shennong The Basis Of Chinese Herb Medicine." <http://www.itmonline.org/arts/shennong.htm>. Accessed Jul. 2017.)

Traditional Chinese herbal medicine place emphasis on several significant points in order to obtain the most appropriate and effective form of herbal administration.

First of all, since traditional Chinese herbal medicine consists of natural materials such as plants, animals, and minerals, it is important to pay attention to the species of the drugs, their habitat, collection and storage to determine the quality and therapeutic effectiveness. For instance, the quality of the soil in different places can be different, and so the content of active substances may not be the same in drugs. Other factors that affect the content are the quality of water and the climate. It should be noted that the quality of drugs is closely related to the time and the method of collection.

In addition to these factors, drugs can be processed to increase their potential or reduce their adverse effects. For example, honey is utilized to process Flos Farfarae which is the dried flower bud and has been used to cure airway illnesses for thousands of years. Upon processing it with honey, its effect of moistening the lungs is increased to fight against coughing. Herba Epimedii which is traditionally used to relieve stress and fatigue and strengthen kidneys is recorded to be cooked with sheep fat to support its effectiveness on kidneys. Additionally, vinegar is used to increase the solubility of its alkaloids in Rhizoma Corydalis to raise analgesic effect.

Chinese herbs are classified into three groups as upper (or superior), middle, and lower (or inferior). The groups were explained by Tao Hongjing in his expanded edition of the *Shennong Bencao Jing*. Indicating that this system already existed in the original work, he describes three types of herbs. The nature of the upper class drugs is capable of expelling illnesses. However, they cure diseases in a long time since they are gentle. On the other hand, the drugs in the middle class are said to be more closely connected with curing of illnesses. When they are taken, they eliminate actual suffering. It is indicated that they should be taken gradually in order to increase one's life span. Lastly, the drugs of the lower class have the nature to detain and kill. They are not to be consumed over an extended period of time since they may deteriorate the harmony of the organism. When an illness is cured, the drugs must be stopped

immediately. These drugs can also be blended and act collectively when needed (Unschuld, 1943:2). These three categories of herbs are summarized in the following table:

Table 1

Chinese Classification of Herbs

| Quality        | Upper                     | Middle                  | Lower            |
|----------------|---------------------------|-------------------------|------------------|
| Image          | heaven                    | man                     | earth            |
| Principles     | humaneness and creation   | feelings and desires    | detain and kill  |
| Correspondence | come to life and flourish | completion and maturity | decay and burial |
| Nature         | gentle, not hasty         | quick or gradual        | marked effect    |

Source: Dharmananda, Subhuti, The Lessons of Shennong The Basis Of Chinese

Herb Medicine. <http://www.itmonline.org/arts/shennong.htm>. 10 July 2017.

Another point is that different from modern medicine, traditional Chinese medicine considers meridians in the body before administering medication to treat a physical or mental disorder. In ancient China, meridians are thought to be paths in the human body through which the life-energy "qi" flows. There are twelve principal meridians divided into Yin and Yang energy and connected with the organs. The drugs are prescribed according to meridians to achieve the best result. In this way, the most appropriate drug for the specific organ is also selected (<http://www.itmonline.org/arts/shennong.htm>).

The drugs in Traditional Chinese Medicine are categorized according to the nature of four properties of the body and their ascending and descending, floating and sinking nature. Four properties are indicated as cool, cold, warm

and hot. Basic yin yang correspondences are used to define these properties. The theory of yin yang describes a universal qualitative standard. It is indicated that the yin aspect of something exists only in opposition to its yang aspect. These are the oppositions such as heaven and earth, sun and moon, night and day, male and female, up and down, and inside and outside (Lozano, 2014:15). Similarly, yin yang correspondences define cold and hot symptoms. Therefore, in Traditional Chinese Medicine, symptoms and diseases are classified into two categories as cold and hot. The examples of hot symptoms are "thirst, fever, irritability, restlessness, warm feeling, dry mouth, and pain that is relieved by cold, whereas cold symptoms are clear urine, sharp pain, stiff joints, and pain that is relieved by warmth" (Yan et al., 2014:11). Taking these two different categories of symptoms and diseases into account, drugs that can treat cold diseases are warm or hot properties and drugs that can treat hot diseases have cool or cold properties. It is indicated that drugs with cool or cold properties clears toxic materials and heat, removes heat from blood, nourishes yin and purges fire while drugs with warm or hot properties warms the interior, supports yang energy and replenish qi. Cold drugs generally have tranquilizing, sedative, analgesic or anti-convulsant anti-microbial, anti-inflammatory and anti-toxin anti-tumor actions whereas warm drugs usually stimulate the central nervous system. When it comes to ascending, descending, floating and sinking natures of the drugs, to increase yang energy and to expel cold the drugs with ascending and floating actions are used while in order to balance the flow of qi and to relieve asthma drugs with descending and sinking actions are used. The drugs are also classified into three groups in TCD as non-toxic, slightly toxic, moderately toxic and extremely toxic. (<http://www.china.org.cn/english/MATERIAL/185685.htm>)

Although the modern pharmacology started in China 70 years ago, the government has contributed to the development of traditional pharmacology starting from the 1950s. Today natural sources are used for both clinical trials and experiments. This means that the traditional pharmaceutical preparations are transforming. New forms of TCD include powders, injections, tablets, and capsules. In clinical practice, doctors refer to traditional Chinese medicine and

they prescribe more than one medicine which are compatible with each other. Since the 1920s modern Chinese pharmacologists have been studying traditional Chinese drugs in the light of modern science. Chemical elements in prescriptions are being investigated. Therefore, modern pharmacology in China includes both classical methods and the new data. As for the 1980s, the pharmacology of Chinese materia medica has been taught in colleges related to TCM. Textbooks have also been published. However, it is indicated that further research should be conducted on TCM. (<http://www.china.org.cn/english/MATERIAL/185685.htm>)

### **1.5.1.3. Egyptian Pharmacology**

Ancient Egyptians are the pioneers of many achievements. Their mastership ranges from architecture to mathematics, from astronomy to medicine and from developments in agriculture to scientific investigation. The achievements of Ancient Egyptians include "pyramids, temples, obelisks, a system of mathematics, a practical and effective system of medicine, irrigation systems, agricultural production techniques, the first known ships, Egyptian faience and glass technology, new forms of literature, and the earliest known peace treaty which was made with the Hittites around 1259 BC" (Bryce, 1999:256).

Egyptians were also the pioneers in medicine as they are in many fields. Modern science and technology could barely catch up with the developments in ancient Egypt after many years. Gosse states that:

"As in many other branches of science, Egypt must be considered the pioneer in medicine. The principles as there taught and practised are undoubtedly the foundation of our modern science; and indeed it is only since the eighteenth century that we have definitely advanced beyond the point that they had reached three or four thousand years before Christ."  
(1916:111)

One evidence of these advancements is ancient Egyptian papyri. Medical papyri date back from the 12<sup>th</sup> dynasty to the 20<sup>th</sup> dynasty (2000-1090 BC).

These papyri are the Kahun Gynecological Papyrus, the Ebers papyrus, the Edwin Smith surgical papyrus, the Hearst, the Chester, the Berlin and the London. One of the most well-known existing medical documents is the Ebers Papyrus (1550 B.C.). It includes 800 prescriptions of 700 drugs. The Edwin Smith Papyrus was written in 1600 B.C. and has information and instructions for surgery and formulas of cosmetics. The Smith Papyrus dates back to 3000 B.C. It is one of the most important papyri because it gives a lot of information about a lot of herbs. These herbs include thyme, cumin, saffron, peppermint, and lotus. As well as giving information about all these kinds of herbs, the Smith Papyrus also provides cures with simple methods. (<http://www.chem.uwec.edu>)

In this respect, Amy Bothwell-Gosse states in her book entitled *The Civilization of the Ancient Egyptians* that:

"The materia medica of ancient Egypt in use was chiefly of vegetable origin, so it was absolutely necessary to study botany and to be familiar with the medicinal properties of the countless herbs that provided the Egyptian doctor with his drugs. Most of the plants mentioned cannot be recognized now, but woodruff, palm, acacia, sycamore, olives and dates and other fruits, were used. These were made up as draughts or inhalations, fomentations, ointments, liniments or poultices, in the way most applicable to the disease under treatment" (1916:113).

Similarly, the Egyptian medical schools were very popular. Their fame spread over the whole civilized world. It is known that when the royal families of other nations have a health problem, an ambassador used to go to Egypt to bring a talented specialist to cure people. In Ancient Egypt, practitioners were rewarded from the public treasury and the doctors also received fees for advice and attendance of "Public Health" appointments. They were competent at several fields such as physiology, anatomy, and surgery and this knowledge was called "the secrets of the doctor." (Gosse: 1916:111).

Amazing developments in ancient Egypt contributed a lot to pharmacology. Ancient Egyptians mostly used plants and herbs for the treatment of illnesses; however plants and herbs were not the only products that they utilized for the recipes of treatments. As well as the plant ingredients, they used animal

substances and minerals. Gosse indicates that ancient Egyptians only used honey, milk, wax, gall, and horn of stags as cures obtained from animal substances (1916:115). Surprisingly, it is discovered that ancient Egyptians used another class of recipes. Gosse also states that: “In addition to these plant, mineral, and animal ingredients, which are all wholesome and healing, we find another class of recipes, fortunately of rare occurrence, compounded of loathsome materials —excreta of various animals, the brains of a tortoise, lizards' blood, serpents' fat, etc.” It is known that this mixture used to be applied as a poultice. In modern medicine and pharmacology, excreta of animals were valued and used in formulas. Padmanahban and Sujana state that “Entire organism and their body products like flesh, bones, teeth, bone marrow, fat, shells, musk, secretions, testicles, as well as their products like milk, curd, butter, ghee, honey and even the metabolic products like urine and excreta (dung) are used in traditional medicine. They are used either alone or in combination with other herbs and minerals.” (2008:327)



| INGREDIENT    |  |  |  |  |  |  |
|---------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|               | Honey                                                                               | Garlic                                                                              | Aloe Vera                                                                           | Mint                                                                                 | Poppy Seeds                                                                           | Sesame Seeds                                                                          |
| USED TO TREAT | Sore Throats                                                                        | Digestive problems                                                                  | Burns<br>Skin Rashes                                                                | Bad Breath                                                                           | Headaches                                                                             | Asthma                                                                                |

Fig. 4. Herbs that were used to treat specific ailments in Ancient Egypt

(The Ebers Papyrus; <https://sghshistoryofmedicine.wikispaces.com/The+Ebers+papyrus>. Accessed Jul. 2017.)

#### 1.5.1.4. Arabic Pharmacology

At first Islamic medicine which is also called prophetic medicine consisted of hygienic and herbal popular practices that were applied according to the traditions of the prophet. In the following years, they became the source of medical rules. These medical traditions have informal terminology which is different from scientific medicine because it includes less borrowings and adaptations from Greek sources. The corpus of classical Arab includes information from prophetic medicine although scientific medicine occupy the largest space (Romani, 2011:97).

Although Islamic medicine is mostly based on a kind of holistic treatment in which both body and spiritual health is equally important, physicians were also competent at drug interactions. Islamic medicine divided drugs into two groups. The first group was simple drugs which were used for treatments first and the other group is compound drugs which include two or more simple drugs which were used when the first treatment failed.

There are three stages of the history of Arab medicine: i) Greek into Arab, ii) Arab, and iii) Arab into Latin.

The first stage "Greek into Arab" started when Islam spread to the two-thirds of the world in the eighth century. In this period, Greek philosophical and scientific manuscripts were translated in Arabic. The Khalifs in Baghdad discovered that they could learn from Greek science; for this reason, they founded an institution called "The House of Wisdom". The most famous of all the translators at that time was *Hunayn Ibn-Is'haq*. A lot of medical manuscripts by Hippocrates and Galen, philosophical works by Plato and Aristotle, and mathematical works by Euclid and Archimedes were translated by *Hunayn Ibn-Is'haq* and his team. Hospitals and medical schools increased in Baghdad and provincial cities during that period. During the eighth century, Arabs in Baghdad separated medicine from pharmacological science for the first time in history (Saad et al., 2005:477). Saad et al. indicate in their article that:

At that point, patients started to deal with experts in the pharmaceutical sciences working on the extraction and preparation of remedies, and not with physicians who were now responsible for the diagnosis of diseases and follow-up with the applied treatments. This fact resulted in a huge development in pharmaceutical science (2005:477).

With the help of these translations, the works of Galen and Hippocrates could be read in Arabic. Therefore, Christians' monopoly on medicine disappeared and the second period in Arabic pharmacology started. The Arabic-Islamic scientific medical tradition is based on humoralism theory. According to humoralism theory, "the human body is a vessel filled with four humors (Blood, Yellow bile, Black bile, Phlegm) connected to qualities (according to the dichotomy hot-cold and wet-dry), to the four elements (air, fire, earth, water), to seasons (spring, summer, autumn, winter), temperaments (sanguine, choleric, melancholic, phlegmatic) and human organs (liver, gall bladder, spleen, brain and lungs). On condition that these fluids are in balance, a person is healthy. In other words, diseases and/or disabilities are resulted from an excess or deficit of one of these four humors" (Romani, 2011:99).

It is known that Arab scholars contributed a lot to medical science during this period. Ibn Sina who is also known as Avicenna was the most important author in Medieval Arabic. Some of other reputable scholars were *Al Tabbari* (838-870), *Al Razi* (Rhazes) (846- 930), *Al Zahrawi* (930-1013), *Avicenna* (980-1037), *Ibn Al Haitham* (960-1040), *Ibn Al Nafees* (1213-1288), and *Ibn Khaldun* (1332-1395).

The third period which is called "Arab into Latin" started in the twelfth century. In this period, European scholars realized that there were a lot of scientific and philosophical information that they can learn from the Arabs. So they started to read Arab manuscripts in the science and philosophy. They also translated the most important manuscripts into Latin (Romani, 2011:100).

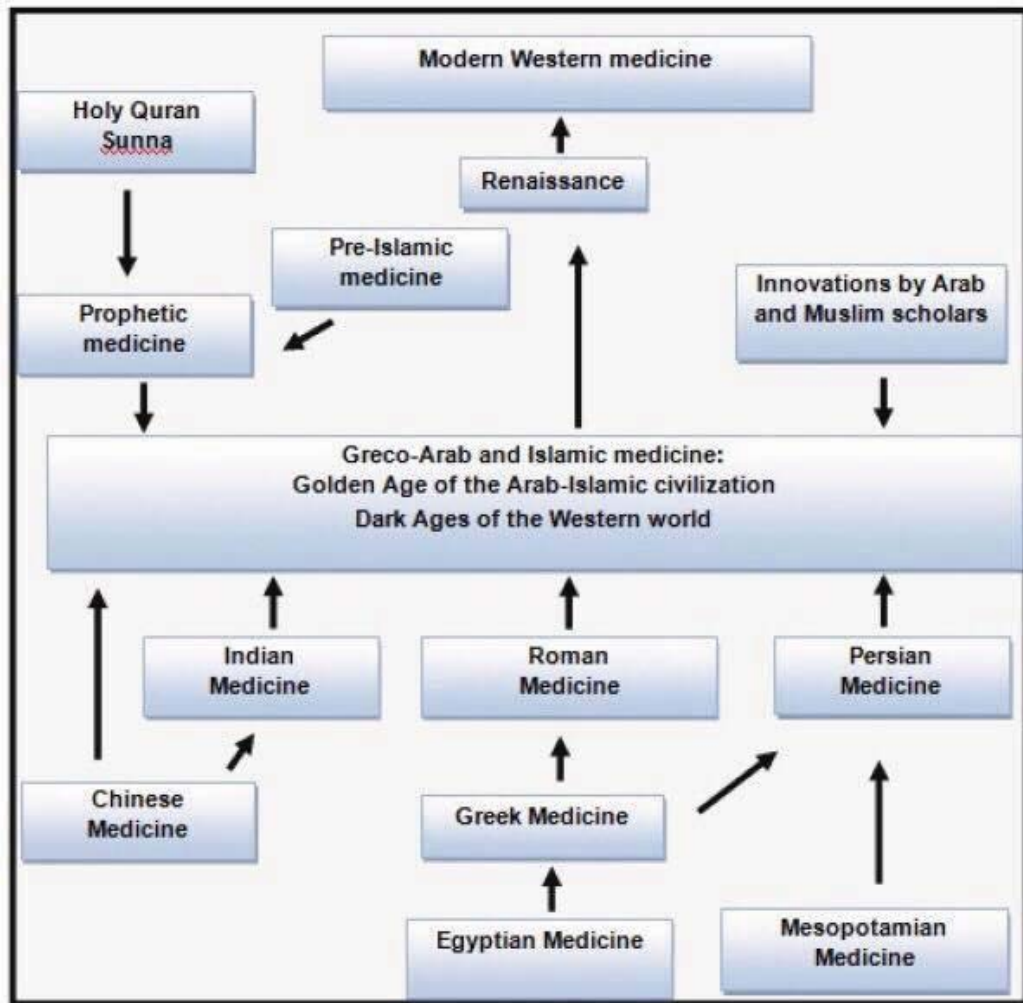


Fig. 5. Interactions of the civilizations in respect to the development of medicine

(Saad, Bashar. Greco-Arab and Islamic Medicine: A Review. 23 Dec. 2013.

[http://www.academia.edu/21116503/Greco-Arab\\_and\\_Islamic\\_medicine\\_a\\_review](http://www.academia.edu/21116503/Greco-Arab_and_Islamic_medicine_a_review). Accessed on Jul. 2017.)

#### 1.5.1.5. Greek Pharmacology

In ancient Greek, recorded pharmacological developments date back to the late 4<sup>th</sup> century (Longrigg, 1998:160). There were scholars that worked before, during and after the time of Hippocrates on medicinal plants. It was recorded that there were great amount of researches on various herbals in those times.

One of the most well-known physicians that is worth mentioning is Diocles. Diocles of Carystus who lived between 375 B.C. and 295 B.C. was a famous

Greek physician. Diocles worked very short after the time of Hippocrates. He especially specialised in practical medicine. Although very little part of Diocles's work has survived, he is known as the first that wrote about the medical use of plants (Longrigg, 1998:160). It is known that Diocles wrote all Greek pharmacotherapeutic treatises between the time of Theophrastus and Dioscorides.

As well as Diocles, Plato's, Theophrastus's and Pedanius Dioscorides researches were influential in Ancient Greek pharmacology. Plato, who was a philosopher in Classical Greece and the founder of the Academy in Athens warned people about the fatal side effects of herb and recommended that a disease should not be irritated unless it is very dangerous (Longrigg, 1998:160). Theophrastus, on the other hand, explained the herbs, their dangers, the techniques to collect them and the methods that show how to use them. Additionally, Pedanius Dioscorides, a Greek physician lived between 40 and 90 A.D., has valuable contributions to pharmacology. He was a pharmacologist, botanist, and author of *De Materia Medica*. *De Materia Medica* of Ancient Greek is a five volume Greek encyclopaedia that was written in the 1<sup>st</sup> century AD. It was written to describe herbal medicine, related medicinal substances, and plants that were found in the Greek-speaking eastern Mediterranean (Staub et. al., 2016:1044).

Moreover, Hippocrates of Kos, also known as Hippocrates II, is one of the most influential physicians in the Ancient Greek. He is also known as 'Father of Western Medicine'. In Hippocratic Collection, which is also referred Hippocratic Corpus, Hippocrates's followers compiled early Ancient Greek medical works (Herakleitus, 1931:7) Hippocratic Corpus give information about the recipes, remedies, popular and common treatments of the early ancient Greek period.

As a result, researches and developments related to herbalism and pharmacology in Ancient Greek have undoubtedly contributed a lot to pharmacological studies.

### 1.5.1.6. Turkish Pharmacology

Before pharmacology has become a science, physicians in medical faculties used to prescribe herbal based medicines all around the world. Prof. Dr. Alaeddin Akçasu underlines that pharmacology has become a field of science thanks to Otto Schmiedeberg in 1874 (91:3). There weren't any empirical studies at that time; however, there was a branch of medical science which handled the sources, nature, properties, and preparation of drugs. It was called the *Materia Medica*. During the Ottoman period, the *Materia Medica* was taught at medicine schools founded by II. Mahmut in 1827. (Akçasu, 91:3) In the Ottoman Medicine, physicians used the *De Materia Medica* by Pedanius Dioskorides who was a Greek physician and pharmacologist and whose work *De materia medica* was a leading classical source of modern herbal medicine. (Ataç and Yıldırım, 2004: 258) Islamic scholars such as İbn Sina, İbn Baytar, Razi ve Biruni benefited from the *De Materia Medica* and contributed a lot to Turkish pharmacology. (Ataç and Yıldırım, 2004: 258)

After the establishment of the Republic of Turkey, studies on pharmacology have increased substantially. Professor Akil Muhtar Özden who was born in Istanbul in 1877 is thought to be the founder of pharmacology in Turkey. (Süzer, 2014:13) He started to study at Geneva Faculty of Medicine in 1897. During his university years, he followed the lectures of famous professors such as Widal, Chauffard and Dejerine in France. He became assistant professor of pharmacodynamics in 1906 and started to lecture in the fields of pharmacology and medicine. After he returned to Turkey, he worked at Haydarpaşa Faculty of Medicine. He has an important role in the preparation of the Turkish Pharmacopeia (Başagaoğlu, 2008: 83, 84). As Süzer points out:

Although schools of pharmacy and dentistry were opened in that period, there were no separate pharmacology departments. One of the important developments during this period was the first publication of the Turkish Pharmacopeia (2014:13)

After Özden retired, a new era in the Turkish pharmacology started. Ankara University was founded in 1946 and the Ege University was founded in 1955. These two universities became the centre of pharmacology. Süzer states that:

During this time pharmacology Professors Alaeddin Akcasu, Sükrü Kaymakcalan, Kazim Turker, S. Oguz Kayaalp, Hikmet Koyuncuoglu and Burhan Kiran were set to become the major influencers of the next era and a separate institute of pharmacology was founded at the Faculty of Veterinary Medicine in Ankara University (2014:13).

The 1960s are the important years in the history of Turkish pharmacology since developments and studies gained momentum. In these years, the number of faculties and departments of pharmacology increased and the foundations of the Turkish Pharmacology Society were laid with the contribution of professors and assistant professors in 1966. The Turkish Pharmacology Society organized the first national pharmacological congress in 1973. Professor S. Oğuz Kayaalp states that pharmacological congresses have been held in Turkey biannually since 1974 (<http://www.tfd.org.tr/eski/tarihce.htm>). With the help of these congresses, studies on pharmacology became even more important as of 1970s.

In connection with the need of sources about pharmacology at the related departments in universities, the number of translation of pharmacology books have increased. Publication of the books written on pharmacology in Turkey also started to increase in parallel with the translated books. Therefore, translation of pharmacological books has contributed a lot to the development of pharmacology in Turkey.

## 1.6. MODERN PHARMACOLOGY ON THE WORLD

As it is stated before, pharmacology is as old as humanity. However, similar to other advances in science, the study of drugs has blossomed out in the last twenty five years (Riker: 1962:143). Pharmacology started to be accepted as a science with the formation of big states and substantial development in economy in the 18th and 19th century

(<http://www.adaptogens.org/original/research/pharma/Pharmacology002.html>).

While herbs and drugs were used with the aim of treating people in ancient times, they attract the attention of academic disciplines and clinical fields in the modern world. Walter F. Riker states that:

Actually thousands of drug substances have appeared in the pharmacologic arena; most have commanded only fleeting attention, some have attracted more compelling interest for academic or clinical reason, but all, simply because they have been the objects of pharmacologic research, have been the means by which have arisen those principal concerns that uniquely constitute modern pharmacology (1962:143).

In this regard, pharmacology and its branches have been refined through pharmacological researches. Moreover, other discipline such as nursing, dentistry have become interested in this field of study and the name of pharmacology started to be associated with scientific fields. The first reason of this association is that pharmaceutical information, chemical substances and their effects are closely related to these fields. Another reason is that treatments and drugs are indispensable parts of the fields such as nursing and dentistry. According to the American Society for Pharmacology and Experimental Therapeutics:

... pharmacology is the science of drug action on biological systems. In its entirety, it embraces knowledge of the sources, chemical properties, biological effects and therapeutic uses of drugs. It is a science that is basic not only to medicine, but also to pharmacy, nursing, dentistry and veterinary medicine. Pharmacological studies range from those that determine the effects of chemical agents upon subcellular mechanisms, to those that deal with the potential hazards of pesticides and herbicides, to those that focus on the treatment and prevention of major diseases by drug therapy. Pharmacologists are also involved in molecular modelling of drugs,

and the use of drugs as tools to dissect aspects of cell function”  
(<https://www.aspet.org/knowledge/what-is-pharmacology>).

In the last quarter of the 20<sup>th</sup> century, many other fields are involved in pharmacology, which have paved the way for significant progress in pharmacological studies. Through further research in the field, new discoveries have been made. After synthetic preparations were introduced, pharmaceutical industry thrived and pharmacological researches gained importance. With the contributions of further studies, pharmacology has been divided into new branches.

These two branches of pharmacology can be categorized as general and specialized. While general pharmacology concerns the action of medicines, special pharmacology tackles with concrete pharmacological groups and individual preparations. The important branches of these two subdivisions are pharmacokinetics and pharmacodynamics of the medicinal preparations.

(<http://www.adaptogens.org/original/research/pharma/Pharmacology002.html> )

Developments in pharmacology lead the way to students who are trained to become biomedical scientists to study the effects of drugs on living organisms. They acquire detailed knowledge of numerous subjects including physiology, pathology, chemistry, biochemistry, cell biology, genetics, medical microbiology, and neuroscience. Thanks to well-qualified pharmacologists, new discoveries were made and the functions of human body were understood better. Today, researches and discoveries are being made both at universities and at the factories related to the pharmacological field.

## 1.7. PHARMACOLOGICAL LANGUAGE

Pharmacological language is a language for special purposes that is defined as "a codified formalized and language which is used for special purposes with a purpose of communicating information among specialists with economic, precise and unambiguous terms possible" (Picht and Draskau, 1985: 3). Through pharmacological language, scientific information is delivered to scientists, specialists, doctors or chemists who work in the field of pharmacology.

There are significant differences between general and specific languages. These differences are resulted from the characteristics of both texts. The most distinctive characteristic of special languages is its being difficult to be understood by non-specialists. Similar to medical language, there are distinct characteristics of pharmacological language at different levels, such as morphology, lexis, and syntax. Therefore, the specialized language of pharmacological texts are often criticized for its being obscure. One can only understand what s/he already has the related knowledge or experience. When people who are competent at a special field of science communicate with each other through linguistic elements in the special context, it can be quite difficult for a non-specialist to understand the meaning of explanations (Askehave and Zethsen, 2000:67). In this case, when the target audience changes, the characteristics of the language should also be adjusted in order to render it understandable to non-specialist people. As the same, the obscureness of technical texts including medical and pharmacological texts is resulted from specific characteristics that their language systems include. Maglie also indicates that the obscure nature of medical texts comes from the lexical, syntactic and textual features of the language (2009:23). Sager et al. indicates that the fundamental characteristics of language are maximized or minimized in special language (1980:17). These characteristics cause technical texts to be perceived complex and obscure especially by non-specialist. Askehave and Zethsen indicates that:

In terms of syntactic features in inserts, the lack of user-friendliness is of a somewhat different nature. Whereas special terms may be completely unknown to the consumer and may present an immediate obstacle to comprehension, most syntactic and grammatical features in inserts are in fact known to the consumer. The non-specialist does encounter nominalisation, passive voice etc. in less specialised texts as such syntactic features are features of general language as well. However, the frequency of particular complex structures makes the texts less accessible to the reader – simply because the complexity makes the texts more compact and difficult to digest (2000:67).

As indicated, complex structure of technical texts along with specific terminology result in obscureness among non-specialists. Another point that was indicated by Stolze is that culturally based conventions may also cause problems for scientific communication.

When we accept that texts function within cultures, there must also be some cultural features discernable in those texts. Cognitive text processing based on reading is a partly intuitive interaction between the bottom-up input of the text structure and the top-down intervention of the content of one's memory. That means that understanding can be put down to linguistic structures on the text level that first triggered the respective cognitive reaction. Culture will be present in texts, even in technical ones. (Stolze, 2009:125)

Therefore, being aware of cultural elements in scientific texts is also important to understand and translate the text precisely.

Erten who is one of the translation scholars working on technical and medical translation and who is also the author of the book titled *Medical Terminology and Translation of Medical Texts* explains the characteristics of technical translation as follows:

Since the purpose of technical texts is to convey information expressed by the scientist it is possible to produce an accurate translated text. In other words, to produce another text that achieves the same aim in the target language as does the source text in the source language is quite possible. Hence the translator of technical texts should convey to the reader of the target language the translation of the information which the source language intended to convey. Technical language is usually free from emotive language, connotations, sound-effects and figures of speech when properly used (Erten, 1997:19).

The features that are mentioned above and the complexity of the technical texts can be a hinderance for the reader; however, as specialists are assumed to possess pre-knowledge of the subject, it is possible for them to understand the context and the function of the text adequately. Moreover, translators are expected to have all the necessary information about the technical document which is commissioned and as an expert, they translate the text adequately and equivalently.

It is also known that the language of pharmacological texts must be clear, adequate, precise and correct. Mark Herman indicates that clarity, concision and correctness are the most important stylistic goals of technical texts and translation (1993:11). Since the actions that are taken according to given information cannot possibly be reversible in medical and pharmacological field, clarity, concision and correctness of the texts are essential in order to avoid mistakes and misunderstandings. Another point that one should pay attention when creating or translating a technical text is that of preserving the features of technical texts while transferring it precisely. To Sager et al., special languages that are used in technical texts are semi-autonomous languages which have complex semiotic systems that are derived from general language and they are used for special education limiting the communication among specialists in the same or closely related fields (1980: 69). This limited communication entails a context and function. What renders it different is language varieties that are used to express the message.

As indicated, pharmacological texts are characterized by a specific language and a specific terminology. There are some distinct lexical features of pharmacological texts. Firstly, similar to the language of medical texts, the language of pharmacological texts includes many words from Greek such as protein, pepsis, kranion and Latin such as fibrin, chloride, amylase.

As it is explained in Chapter 1.5.1.5., Ancient Greek contributed a lot to both medicine and pharmacology. They were the founders of rational medicine

requires that "patients receive medications appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and their community" (Holloway K and van Dijk L, 2011:2).

"Greek medicine migrated to Rome at an early date, and many Latin terms crept into its terminology. Latin was the language of science up to the beginning of the 18th century, so all medical texts were written in Latin. Under the influence of the great anatomical work of Andreas Vesalius, *De humani corporis fabrica* (1543), the terminology of anatomy is almost exclusively Latin" (Laszlo Repas, 2013: 5).

Until the 18th century, both the Hippocratic School and Galen of Pergamom formulated important theories. Thanks to these studies, they named numerous medical and pharmacological terms that are still used. It is estimated that about three-fourths of medical terminology comes from Greek origin (Laszlo Repas, 2013: 5).

It should also be noted that the Greek language is suitable for the usage compound words (Laszlo Repas, 2013: 5). As well as the terms that have a stem combined with one or more prefixes or suffixes, there are some words which have an additional stem as a component part. Nouns, adjectives, and adverbs may be used together in compound words. It is indicated that chemical compound words are formed very irregularly. They are formed using both Greek and Latin stems in one word; therefore, they are called hybrid words which derive from both Greek and Latin.

The classical roots, suffixes and prefixes in Greek and Latin enabled medical language to become an international language. When developments in medicine migrated to Rome in ancient times, a lot of Latin terms were added to its terminology. Since the beginning of the 18th century, Latin has been the language of science; therefore, all medical texts were written in Latin at that time. It should also be noted that thanks to the anatomical work of Andreas Vesalius, *De humani corporis fabrica* (1543), the terminology of anatomy is almost Latin. The words with Latin origin on medical language has undoubtedly

affected pharmacological language as well. In *Katzung and Trevor's Pharmacology Examination and Board Review*, it is very common to encounter words with Latin suffixes and prefixes such as acidosis, amithiozone, asymptomatic, antibody, bicarbonate, cysticercosis cystitis, diabetes, and fluoride.

Another distinct feature of pharmacological texts is long and complex sentences. As well as combining the elements in a long sentence, too much technical information is also delivered in a single sentence. Stolze indicates that:

"Whereas the languages in literature demonstrate a great variety of creative linguistic forms, technical communication uses a purposeful reduction of stylistic forms where the content-oriented nature of technical communication means that short assertive sentences, a linear theme-rheme organisation, and a dense syntactic compression are prevalent. However, there are differences between languages, beyond technical and scientific writing styles" (2009:129).

The fact that encountering short assertive or long complex sentences in technical texts depends on the text itself. In *Katzung and Trevor's Pharmacology Examination and Board Review*, there are long explanatory sentences with technical information as well as short instructions especially for test sections.

The use of passive voice is also another distinct feature of technical language. Distinct examples are very common in *Katzung and Trevor's Pharmacology Examination and Board Review* where numerous passive sentences can be seen in a single paragraph. The examples taken from *Katzung and Trevor's Pharmacology Examination and Board Review* are as follows:

**Example 1:**

**ST:** "Spare receptors are said to exist if the maximal drug response is obtained at less than maximal occupation of the receptors. In practice, the determination is usually made by comparing the concentration for 50% of maximal effect ( $EC_{50}$ ) with the concentration for 50% of maximal binding ( $K_d$ ). If the  $EC_{50}$  is less than the  $K_d$ , Spare receptors are said to exist (Figure 2-3). This might result from one of several mechanisms. First, the effect of the drug-receptor interaction may persist for a much longer time than the interaction itself. Second, the actual number of receptors may exceed the number of effector molecules available" (Trevor, Anthony J. et. al., 2002:13).

**TT:** "Yedek Reseptörler: Reseptörlerin tümü işgal edilmeksizin maksimal ilaç yanıtı elde edildiğinde yedek reseptörlerin var olduğu söylenir. Pratikte, bu tespit sıklıkla maksimal bağlanmanın %50'si için gerekli konsantrasyonla ( $K_d$ ) maksimal etkinin ( $EC_{50}$ ) karşılaştırılmasıyla yapılmaktadır. Eğer  $EC_{50}$ ,  $K_d$  değerinden daha küçük ise, yedek reseptörlerin var olduğu söylenir (Şekil 2-3). Bu bir çok mekanizmanın herhangi birinden dolayı meydana gelebilir. Birincisi, etkileşiminin etki süresi ilaç-reseptör birlikteliğinden daha uzun süre devam edebilir. İkincisi, reseptörlerin gerçek sayısı mevcut efektör moleküllerin sayısından fazla olabilir" (Özyazgan, 2002:13).

It is apparent in the examples above that technical texts are characterized with the use of passive. In the first examples, passive structures such as "are said", "is obtained", and "is usually made" have been translated as "söylenir", "elde edildiğinde", and "yapılmaktadır". As it is seen in the example, passive forms of these verbs have been used in both ST and TT.

**Example 2:**

**ST:** "Toxic Metabolism: Drug metabolism is not synonymous with drug inactivation. Some drugs are converted to active products by metabolism. If these products are toxic, severe injury may result under some circumstances. An important example is acetaminophen when taken in large overdoses (Figure 4-1). Acetaminophen is conjugated to harmless glucuronide and sulfate metabolites when it is taken in normal doses. If a large overdose is taken, however, the metabolic pathways are overwhelmed, and a MSG-dependent system converts some of the drug to a reactive intermediate (N-acetyl-p-benzoquinoneimine). This intermediate is conjugated with glutathione to a third harmless product if glutathione stores are adequate. If glutathione stores are exhausted, however, the reactive intermediate combines with essential hepatic cell proteins, resulting in cell death. Prompt administration of other sulfhydryl donors (eg, acetyl cysteine) may be life-saving after an overdose. In severe liver disease, stores of glucuronide, sulfate, and glutathione may be depleted, making the patient more susceptible to hepatic toxicity with near-normal doses of acetaminophen. Enzyme inducers (eg, ethanol) may increase acetaminophen toxicity because they increase phase I metabolism more than phase II metabolism, thus resulting in increased production of the reactive metabolite" (Trevor, Anthony J. et. al., 2002:36).

**TT:** "Toksik Metabolizma: İlaç metabolizması ilaç inaktivasyonu ile eş anlamlı değildir. Bazı ilaçlar metabolizma sonucu aktif ürünlere dönüşür. Eğer bu ürünler toksik ise bazı koşullarda ciddi hasara sebep olabilirler. Asetaminofenin yüksek dozlarda alımı buna önemli bir örnek teşkil eder. Asetaminofen normal dozlarda alındığında zararsız sülfat ve glukuronid metabolitlerine konjuge olur. Eğer aşırı doz alınmışsa metabolik yollar aşırı yüklenir ve P450-bağımlı sistem ilacı reaktif bir ara ürüne (N-asetil-p-benzokinonimin) dönüştürür. Eğer glutatyon depoları yeterli ise bu ara ürün de glutatyon ile konjuge edilerek zararsız üçüncü bir ürüne dönüşür. Eğer glutatyon depoları tükenmişse reaktif ara ürün temel karaciğer hücre proteinleri ile birleşerek hücre ölümüne neden olur. Aşırı doz asetaminofen alımlarında acil olarak diğer sülfidril vericilerinin (örneğin; asetilsistein) kullanılması hayat kurtarıcı olabilir. Ciddi karaciğer hastalığı olanlarda glukuronid, sülfat ve glutatyon depoları azalmış olduğundan normale yakın dozlarında bile asetaminofen karaciğere toksik olabilir. Enzim indükleyicileri (örneğin; etanol) Faz 1 metabolizmasını Faz 2 metabolizmasından daha fazla artırıp asetaminofenin reaktif metabolitinin üretimini arttırmakta ve bu da toksisiteyi arttırmaktadır" (Özyazgan, 2002:36).

Similarly, in the second example, the verbs "are converted", "taken", "are overwhelmed", "is conjugated", "is increased" have been translated keeping the passive forms of the verbs as "dönüştürür", "alındığında", "yüklenir", "konjuge edilerek", and "arttırmaktadır". However, in the following example, although passive form of the verb is used in the TT, it has been translated in an active form in the TT: "may be depleted". This verb has been translated as "azalmış

*olduğundan*" in Turkish. Despite this, it is apparent that the use of passive is very common in pharmacological language.

**Example 3:**

**ST:** "ACE inhibitors reduce angiotensin H production, so aldosterone secretion will be reduced. Sodium excretion may increase, and potassium retention is facilitated. These actions will interact benetically with thiazides because the latter drugs are used when sodium excretion is desired and cause potassium wasting as an undesirable effect. When used with potassium-sparing diuretics, the potassium-retaining action of ACE inhibitors (and angiotensin receptor blockers) may result in dangerous hyperkalemia. In general, ACE inhibitors should not be used with any drug that increases serum potassium, including potassium-sparing diuretics and oral potassium chloride supplements" (Trevor, Anthony J. et. al., 2002:156).

**TT:** "ACE inhibitörleri anjiotensin II üretimini azaltır, böylece aldosteron sekresyonu azalacaktır. Sodyum atılımı artabilir, potasyum retansiyonu kolaylaşır. Tiazidlerle etkileşme olacaktır, çünkü bu ilaçlar sodyum atılımı istendiğinde kullanılır ve istenmeyen etki olarak potasyum tutulumuna neden olurlar. Potasyum tutucu diüretiklerle kullanıldıkları zaman ACE inhibitörlerinin potasyum tutucu etkileri (ve anjiotensin reseptör blokeleri) tehlikeli hiperkalemi ile sonuçlanabilir. Genelde ACE inhibitörleri, potasyum tutucu diüretikler ve oral potasyum klorür desteği içeren serum potasyumunu arttıran ilaçlarla birlikte kullanılmamalıdır" (Kutluata, 2002:156).

In the last example, the passive forms of the verbs "*are used*", "*is desired*", "*used*" and "*should not be used*" has also been translated in Turkish in passive voice: "*istendiğinde*", "*kullanılır*", "*kullanılmamalıdır*". However, the verb "*will be reduced*" has been translated in an active verb "*azalacaktır*". The verb "*is facilitated*" has also been translated as *kolaylaşır*. On the other hand tan active verb "*may result*" has been translated in passive form as "*sonuçlanabilir*" in the TT.

All in all, the use of passive is a distinct characteristics of pharmacological language as shown in the examples.

Additionally, the use of abbreviations and acronyms is also characterized by medical and pharmacological language. Abbreviations and acronyms are also

commonly used in *Katzung's and Trevor's Pharmacology Examination and Board Review*. They are given in full at the first use and the shortened form or initial letters of the terms are indicated in brackets, eg: “*Treatment with inhibitors of monoamine oxidase (MAO) type B protects against MPTP neurotoxicity in animals*”. The first advantage of the use of abbreviations and acronyms is its making communication easier. It also saves writing space and reduces reading time. The abbreviations and acronyms commonly used in the book are listed below:

| ST                                                                           | TT                                                                           |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------|
| ABVD regimen: Adriamycin plus bleomycin plus vincristine plus dacarbazine)   | ABVD rejimi: doksorubisin (Adriamycin) + bleomisin + vinkristin + dakarbazin |
| ACAT acyl-CoA: cholesterol acyltransferase                                   | ACAT: kolesterol acil transferaz                                             |
| ACE: angiotensin-converting enzyme                                           | ACE: anjiotensin dönüştürücü enzim                                           |
| ACTH: adrenocorticotropin                                                    | ACTH: adrenokortikotropik hormon                                             |
| ADH: antidiuretic hormone                                                    | ADH: antidiüretik hormon                                                     |
| ANF/ANP: atrial natriuretic factor/peptide                                   | ANF/ANP: atriyal natriüretik faktör/peptit                                   |
| APSAC: antistreplase/anisoylated plasminogen-streptokinase activator complex | APSAC: izole olmayan plazminoljen-streptokinaz aktivatör kompleksi           |
| ATG antithymocyte globulin                                                   | ATG: antitimosit globulin                                                    |
| BNP brain natriuretic peptide                                                | BNP: beyin natriüretik peptit                                                |
| BPH: benign prostatic hyperplasia                                            | BPH: benin prostatik hiperplazi                                              |
| CBD: cannabidiol                                                             | CBD: cannabidiol                                                             |
| CBN: cannabinol)                                                             | CBN: cannabinol                                                              |
| CCNS: cell cycle-nonspecific)drug                                            | HDNS: Hücre döngüsüne spesifik ilaç                                          |
| CCS: cell cycle-specific drug                                                | HDS: Hücre döngüsüne spesifik ilaç                                           |
| CGRP: calcitonin gene-related peptide                                        | CGRP: kalsitonin geniyle ilişkili peptit                                     |
| CO: carbon monoxide                                                          | CO: karbon monoksit                                                          |
| DAG: diacylglycerol                                                          | DAG: diasilgliserol                                                          |
| DHEA: dehydroepiandrosterone                                                 | DHEA: dehidroepiandrosterondan                                               |
| DHFR: dihydrofolate reductase                                                | DHFR: dihidrofolat redüktaz                                                  |
| EDRF: endothelium-derived relaxing factor                                    | EDRF: Endotel kökenli gevşetici faktör                                       |
| FSH: follicle-stimulating hormone                                            | FSH: folikül-stimüle edici hormon                                            |
| G-CSF: granulocyte colony-stimulating factor                                 | G-CSF: Granülosit koloni stimulant faktör                                    |
| GHRH: growth hormone-releasing hormone                                       | GHRH: büyüme hormonu saliverici hormone                                      |
| GREs: glucocorticoid response elements                                       | GREs: Glukokortikoid yanıt elementleri                                       |

|                                                          |                                                          |
|----------------------------------------------------------|----------------------------------------------------------|
| HAART: highly active antiretroviral therapy              | HAART: oldukça aktif antiretroviral tedavisi             |
| HBIG: hepatitis B immune globulin                        | HBIG: hepatit B immun globulin                           |
| hCG: human chorionic                                     | hCG: insan korionik gonadotropini                        |
| HDL: high density lipoproteins                           | HDL: yüksek yoğunluklu lipoprotein                       |
| HGPRTase: hypoxanthine-guanine phosphoribosyltransferase | HGPRTaz: hipoksantin-guanin fosforiboziltransferaz       |
| Hib: Hemophilus influenza                                | Hib: Hemophilus influenzae                               |
| HSV: herpes simplex virus                                |                                                          |
| IPV: inactivated poliovirus vaccine                      | IPV: inactive poliovirus                                 |
| LCAT lecithin: cholesterol acyltransferase               | LCAT lesitin kolestrol aciltransferaz                    |
| LD: lethal dose                                          | LD: letal doz                                            |
| LDL low density lipoproteins                             | LDL: düşük yoğunluklu lipoproteinler                     |
| LSD: lysergic acid diethylamide                          | LSD: liserjik asid dietilamid                            |
| MAC: mycobacterium avium complex                         | MAC: miobakterium avium kompleksi                        |
| MAO: monoamine oxidase                                   | MAO: monoamine oksidaz                                   |
| M-CSF: macrophage/monocyte colony-stimulating factor     | M-CSF: monosit koloni stimulan faktör                    |
| MDMA: methylene dioxymethamphetamine                     | MDMA: metilen dioksiamfetamin                            |
| MEOS: microsomal ethanol-oxidizing system                | MEOS: mikrosomal etanolokside eden sistem                |
| MIT: monoiodotyrosine                                    | MIT: monoiyodotirozin                                    |
| MRSA: methicillin-resistant staphylococci                | MRSA: metisiline dirençli stafilokok                     |
| NOS: nitric oxide synthase                               | NOS: nitric oksit sentaz                                 |
| NSAID: nonsteroidal anti-inflammatory drugs              | NSAID: Nonsteroidal antiinflamatuvar ilaçlar             |
| PBs: penicillin binding proteins                         | PBP: penisilin bağlayan proteinler                       |
| PCDDs: polychlorinated dibenzo-p-dioxins                 | PCDDler: poliklorinli dibenzo-p-dioksinler               |
| PDE: phosphodiesterase                                   | PDE: fosfodiesteraz                                      |
| PPAR-γ: peroxisome proliferator-activated receptor-gamma | PPAR-γ: peroxisome proliferator-activated receptor-gamma |
| PSCs: peribhedral blood stem cells                       | PBSCs: Periferik kanın kök hücreleri                     |
| PTH: parathyroid hormone                                 | PTH: Paratiroid hormon                                   |
| SNAP: synaptosome-associated protein                     | SNAP: Sinaptozomla ilişkili protein                      |
| TCDD: tetrachlorodibenzo-p-dioxine                       | TCDD: tetraklorodibenzo-p-dioksin                        |
| t-PA: tissue plasminogen activator                       | t-PA: doku plazminojen aktivatörü                        |
| VIP: vasoactive intestinal peptide                       | VIP: vazoaktif intestinal peptid                         |

Regarding all these points, it can be stated that pharmacological texts are the texts that are characterized by a specific terminology, and specific language use. Roots, prefixes and suffixes that come from Greek and Latin are commonly used in pharmacological texts. Moreover, long and complex sentences, common passive structures, and abbreviations are the main characteristics of pharmacological texts.



## 2. CHAPTER SKOPOS THEORY

### 2.1. THE BACKGROUND OF SKOPOS THEORY

Many developments have been covered in the field of translation studies over the years. Meanwhile, the foundations of various approaches, theories and methods were laid down. In the 1920s, translation scholars used to focus on linguistic equivalence in translation theory. Translation problems were believed to be solved as long as the equivalence could be obtained between two languages in terms of words, noun phrases and sentences. Hence, the translators tried to produce equivalent texts both in content and in form and they focused on phrases, sentences more as the basic units of translation (Dan, 2015:203). In the 1970s, cultural elements of the society started to be taken into account during translation process. Thus, new functional approaches reproducing the text in the source language and source culture gained importance and considering translation from social and political perspectives replaced linguistic approaches. In this way, functionalism removed not only the limitations of previous approaches, but also the struggles to achieve a fully-equivalent text which is difficult to achieve most of the time. It has become more well-known when the process of translation started to be regarded as a purposeful activity.

Nord mentions two different approaches to translation (2005:15). Both approaches are identified according to the function of the text in the source culture. Nord states that:

“Since communicative purposes need certain conditions in order to work, it is the translator's task to analyse the conditions of the target culture and to decide whether, and how, the source-text purposes can work for the target audience according to the specifications of the translation brief. If the target-culture conditions differ from those of the source culture, there are usually two basic options: either to transform the text in such a way that it can work under target-culture conditions (=instrumental translation), or to replace the source-text functions by their respective meta-functions (=documentary translation)” (2006:131).

As it is indicated by Nord, translation strategies are intended to be determined according to the purpose or function of the translated text. On the other hand, according to Reiss and Vermeer, functionalism has actually emerged from the expression of “offer of information” (1984:119). In this way, the commissioner and/or the receiver designates the function of the text. The commissioner’s and/or the receiver’s determining the function of the TT or specifying the tone of the message that will be conveyed is also useful for another aspect. Since all the receivers understand the intended message differently due to their past experience or knowledge, it can be very challenging for a translator to translate the text (Nord, 2006:132). However, determining the function of the text by the commissioner and/or receiver paves the way towards more substantive production of the translated text. Nord explains that:

“Every translation is intended to achieve a particular communicative purpose in the target audience, and if we analyse who the target audience will be and what they may need and expect, we might be better able to deliver a product that suits their needs and expectations.” (Nord, 2006:133).

From this point on, translation is started to be analysed under the umbrella of ‘theory of action’ and ‘theory of relevance’. Skopos theory is in parallel with the ‘Translational Action’ modal which is also called as ‘Translatorial Action’ or ‘Intercultural Cooperation’. This model was introduced by Holz-Mänttääri in 1981 with the aim of introducing “a modal that can be applicable to a wide range of professional translation situations” (Munday, 2008: 77). Holz-Mänttääri gives importance to provide a model of which the foremost purpose is providing functionally oriented communication cooperated over cultural barriers (1984:7). Socio-cultural context is mainly taken into account. This model which was also described as collaborated process considers all the aspects of inter-cultural translation. Moreover, Holz-Mänttääri is the first theorist who introduced the expressions such as “the initiator”, “the commissioner”, “the target text/source text producer”, “the target text user”, and “the target text receiver”. It is stated by Shuttleworth that:

“The concept of translatorial action places the act of (technical) translation in its broader professional context, in which not only the translator, but also the ST author, the client or commissioner and the TT reader play a role in the process of production” (1997:189).

As it is seen all contributors have specific roles in the translation process. It is indicated that these players have primary and secondary goals (Munday, 2008:77). Holz-Mänttari analyses the roles of different participants in the translation process. It is also stated by Holz-Mänttari that in the case of a professional translator, the primary goal is to earn money. Fulfilling the contract or producing a TT are the secondary goals (1984:138). Therefore, the concept of goal in other words purpose of the translation (*skopos*) is first mentioned by Holz-Mänttari in a broader meaning indicating the process of translation along with the significance of functionally effective communication.

## 2.2. DEFINITION OF SKOPOS THEORY

*Skopos* is a word originated from the Greek language. It means “purpose” or “aim” (Munday, 2008:78). All the human actions are determined by a purpose (*skopos*). Translation is also a subcategory of human actions. Therefore, translation is a result of a purpose. Hans J. Vermeer introduced the term in the 1970s and stated that “*Skopos* is a technical term for the aim or purpose of a translation” (Vermeer, 2000:227). On the basis of Skopos Theory, the purpose of the overall action is of the utmost importance (Vermeer, 1987:29). Unlike the retrospective approach adopted in other theories which initially focuses on the ST, *skopos theory* adopts a prospective attitude to translation. In other words, according to *skopos theory*, *skopos* is said to be defined before the process of translation begins (Vermeer, 1998:235). While determining the *skopos*, it is also essential to define it adequately in order to fulfil the translation successfully (Vermeer, 2000:227,228).

One of the key characteristic of *skopos theory* is functionalism and what renders the theory different is its giving the utmost importance to the function of the TT.

“This theory is one of the functionalist approaches whose aim is to dethrone the source text (ST). This is done by emphasizing the role of the translator as a creator of the target text (TT) and giving priority to purpose (skopos) of producing TT. Functionalism is a major shift from a linguistic equivalence to functional appropriateness. Thus, translation is considered primarily as a process of intercultural communication whose end product is a text which has the ability to function appropriately in specific situations and context of use.” (Schäffner, 1998: 3).

As it is indicated before, translation is started to be seen not as a merely linguistic process, but as a cultural phenomenon as for 1970s. Translation being regarded as a cultural transfer, communicative function of the TT has gained importance. As Schäffner states, "skopos theory is a general shift from predominantly linguistic and formal translation theories to a more functionally and socioculturally oriented approach to translation." (1998:2).

Hence, it can be said that skopos theory has arisen from communicative function. The theory focuses on the reason why translation is started and what are the reasons that determine the target text's function in the target language and culture. "The fundamental principle of the Skopos theory lies in determining the reasons for which the translation is being commissioned and the function of the TT in the target culture" (Hodges, 2010:1).

As it has been indicated, according to *Skopos Theory*, translation is determined by a specific purpose and the purpose may change according to the needs of target culture. Reiss and Vermeer composed these principles with two skopos rules: “an interaction is determined by (or is a function of) its purpose”, and “the skopos can be said to vary according to the recipient” (Shuttleworth, 1997: 156). It is clear that the function or skopos of the TT is determined by the initiator's, or in other words client's, needs. It results in the fact that the target culture and target receiver (reader/listener) shape and limit the skopos of a text. Therefore, functionally adequate target texts can be obtained after applying the most appropriate translation methods and strategies to fulfil the skopos. It makes knowing the reason of translation of the ST and conceiving the function of TT essential for the translator (Munday, 2008:79). As a result, the translator makes the most appropriate decisions to produce the translatum.

Another characteristic of *skopos theory* is its being applicable to all kind of texts. In their book, *Grundlegung einer allgemeinen Translationstheorie*, Reiss and Vermeer intended to introduce "a general translation theory" for all texts. The basic rules of the *skopos theory* that are laid down by Vermeer and Reiss can be applied to any translation. These rules are:

- “1. A translatum (or TT) is determined by its *skopos*.
2. A TT is an offer of information (Informationangebot) in a target culture and TL concerning an offer of information in a source culture and SL.
3. A TT does not initiate an offer of information in a source culture and SL.
4. A TT must be internally coherent.
5. A TT must be coherent with the ST.
6. The five rules above stand in hierarchical order, with the *skopos* rule predominating” (Reiss and Vermeer, 1984: 119).

The first principle shows the need of determining the function of the *skopos* to translate the text from ST to TT. As an expert, either the translator determines the *skopos* of a translation or the commissioner that demands translation to determine it (Vermeer, 2000: 235). Hodges explains the commissioning process and the determination of the *skopos* stating “in the modern world, the commissioning process is usually rather precise in detail, providing information about the aim of the translation, deadlines, payment, etc.” As it comes to determining the proposals with the given specifications that contribute to the translation process and the product, i.e. the TT, Nord postulates an idea that helps make the *skopos* of the TT clear. According to Nord, professional translators think that a specific text is expected to be translated with a specific purpose for a specific kind of receivers. Therefore, they do not demand any detailed commission. In order to fulfil the aim according to an explicit specification, commission should accompany all the translation tasks (1997:47).

In addition, it is indicated in the second rule that a TT is an offer of information. Hence, a ST is translated by meeting the needs of the reader in the source culture. It is indicated by Nord that:

"The translator offers this new audience a target text whose composition is, of course, guided by the translator's assumptions about their needs, expectations, previous knowledge, and so on. These assumptions will obviously be different from those made by the original author because source-text addressees and target-text addressees belong to different cultures and language communication. This means the translator cannot offer the same amount and kind of information as the source-text producer. What the translator does is offer another kind of information in another form" (1997:35).

It is clear that an offer of information initiates the translation process to fulfil a specific function. However, as the function may differ, there can be multiple correct translations for any TT. These possible translations depend on the needs and expectations of target audience. This approach also justifies the use of any kinds of methods when translating the ST. Accordingly, different methods either grammar and lexical based, functional or faithful approach can be followed to realize different aims. When the both parties abide by the translation brief in which the purpose of the translation is indicated, the best possible TT that is functional in the target culture could definitely be obtained. Peter Hodges furthermore states that:

"Whatever the final format of the TT, if it fulfils the instructions of the mutually agreed upon commission, then it is deemed to have achieved its purpose and can be considered to be adequate. In the light of this, it can be seen that the emphasis of the *skopos theory* lies firmly on the TT, with the ST playing a role of secondary importance. The major advantage of Skopos, therefore, lies in the fact that the same ST can be translated in different ways depending on its role and purpose in the target culture" (2010:2).

On the other hand, "if the commission falls beyond the scope of the specifications, that is if the translator is unable to produce the best possible TT available, then an "optimal" version should be agreed upon" (Vermeer, 2000:236).

As it is seen, the purpose of the commission should be clearly discussed and determined at the beginning. In this way, the translator or the initiator can determine the skopos of the text and the strategies that will be followed depending on the purpose. To give an example to the situation, Hodges states that:

“In the case of the 200 page technical report cited above, one concept of the “ideal” translation would be faithful adherence to text type i.e. reproduction of the detailed report. However, because of the obvious time limitations, another text type such as a summary may be proposed as an alternative. This may offer the extra advantage in that the key points raised for discussion in a boardroom meeting may be more easily accessible in a summarised form” (2010:1).

It can be understood that the skopos of a text and the methods that should be applied during translation process depend on the conditions and requirements of the receivers.

As it is indicated in the fourth and fifth rules, "two further general rules are the coherence rule and the fidelity rule. The coherence rule stipulates that the TT must be sufficiently coherent to allow the intended users to comprehend it, given their assumed background knowledge and situational circumstances. The starting point for a translation is a text as a part of a world continuum, written in the SL. It has to be translated into a TL in such a way that it becomes part of a world continuum which can be interpreted by the recipients as coherent with their situation" (Vermeer 1978:100). That is to say, a TT should not necessarily have the source text's expectations, rather it should fulfil its intended purpose and be coherent with its situation.

Coherence rule is also known as intratextual coherence. When the TT is coherent with the receivers' situation, it means the translation is acceptable (Nord, 1997: 32). In this way, the TT receivers can understand the translation. Nord states that "A communicative interaction can only be regarded as successful if the receivers interpret it as being sufficiently coherent with their situation" (1997: 32). In order to render an acceptable and understandable TT,

the situation of the TT receivers such as their culture and social conditions should be considered.

On the other hand, the fidelity rule which concerns intertextual coherence between the translatum and the ST has also been one of the most questioned factors. It reminds faithfulness in equivalence-based translation theories. However, the first one is a dynamic rule which depends on the interpretation of the ST whereas the second one is a static concept.

"In other words, the fidelity rule may require either maximally faithful imitation of the ST or minimal relevance to the ST or anything between these two extremes, whereas the concept of faithfulness requires maximal equivalence to the ST. Therefore, the latter might be a possible form of intertextual coherence" (Dan, 2015:211).

Translators agree that fidelity is an essential part of translation and all the translations should be faithful. However, what is meant by fidelity shows differences. It is generally considered as rendering an accurate meaning as a result of translation process. It requires transferring the ST without deterioration. Therefore, fidelity is generally known as loyalty to the ST. However, the ways of defining fidelity change according to type and purpose of the text, its context and literary features.

As it is stated above, the ways to attain a faithful translation has been questioned by many scholars and theorists from a different perspective. Sherry Simon explains the relativity of achieving reconciliation between different poles as follows:

"Each polar element in the translating process is construed as an absolute, and meaning is transposed from one pole to the other. But the fixity implied in the oppositions between languages, between original/copy, author/translator, and, by analogy, male/female, cannot be absolute; these terms are rather to be placed on a continuum where each can be considered in relative terms" (1996:12).

It is certain that there will be oppositions in each translation process. These oppositions are called '*poles*' by Susan Bassnett. Susan Bassnett indicates that

"contemporary translation studies are struggling against the old binary concept of translation [which] saw original and translated text as two poles, seeking in contrast to conceptualize translation as a dynamic activity fully engaged with cultural systems" (Bassnett 1992:66). The reason of these poles are probably due to attaining functions to the text and using different methods. Namely, while translating the text towards fidelity, translators apply to different practices. For instance, György Radó focuses on four steps to attain fidelity in translation. According to Radó, the first step is understanding the ST thoroughly and avoiding misinterpretations. Secondly, the translator should select the most important elements that needs reproducing in the ST. If there are parts in the text which are not reproducible, the translator should compensate for those important elements in the third step. Lastly, the translator should find impressive and artistic ways of expression (1987:19). In this way, the result will be an accurate translation with minimum losses and appropriate artistic values. While Radó is defining fidelity with these four steps, Christiane Nord states that fidelity is not the result of translation process, yet it is the translator's attitude during the process. Thus, Nord defines fidelity according to translator's behaviour rather than the translation itself.

On the other hand, Vermeer puts forward that "a *translatum* is not a "faithful" copy of the ST since a *translatum* is determined by its skopos or its commission. In the light of *skopos theory*, what is necessary is target texts being accepted by the translator as being adequate to the goal of the action" (2004:228). As it is stated by Vermeer, the TT is defined by its skopos; therefore, although the source and the TT may have some similarities in context or style to some extent, in the framework of the *skopos theory* the TT doesn't have to bear the features of the ST such as its meaning and intention.

It should also be noted that Skopos Theory has a variety of technical terms that has been specified by Christiane Nord and Hans J. Vermeer. The descriptions of these terms are as follows:

**A client** is a person or a company who is in need of a translation for a purpose. S/he is also "the initiator of the translation process" (Nord, 1997:30) and can be the writer of the ST, the recipient, a company or a governmental institution or the translator. To convey the meaning functionally, the initiator commissions a translation and starts the process. The client submits the commission or the translation brief to the translator giving all the details and may direct the translator. They can also negotiate on the translation and come to a decision together.

**The expert** is a term which is used to describe the translator who "is responsible for the performance of the task and the final translatum". According to Holz-Mänttari, the translator is "the expert in translational action" (1984:139). As an expert, the translator plays an important role in fulfilling the purpose of translation. Vermeer suggests:

"Being experts, they are trusted to know more about their particular field than outsiders. In some circumstances one may debate with them over the best way of proceeding, until a consensus is reached, or occasionally one may also consult other experts or consider further alternative ways of reaching a given goal" (2000:228).

Taking into account what has been stated to explain the role of the translator, it can be concluded that *skopos theory* is one of the theories that attach importance to the translator, does not depreciate him/her and makes the translator take an active role during the process.

Another point that should be noted that as an expert the translator is a person who is familiar with both the source and the target cultures and languages (Nord, 2006:132). Since the client is not an expert in communication, s/he is unable to submit the translation commission alone. Therefore, the client negotiates it with the translator. At this point, the translator is a person whose advice is taken into consideration in order to produce the TT which serves the intended purpose best.

"A translator receives the basic information and instructions but is then free to carry out those instructions. The instructions or commission, which are represented by the brief, specify the goal or purpose of a piece of translation. The translator must interpret ST information "by selecting those features which most closely correspond to the requirements of the target situation" (Shuttleworth and Cowie, 1997:156).

In conclusion, depending upon the status that has attributed to the translator, the translator's contribution to translation process has gained importance.

**A commission or a translation brief** is an assignment in which the skopos of the translation is described clearly. Since the translator is assigned to realize the skopos, s/he needs explicit and detailed information specified in the commission. Vermeer indicates that

"Someone who translates undertakes to do so as a matter of deliberate choice (I exclude the possibility of translating under hypnosis), or because he is required to do so. One translates as a result of either one's own initiative or someone else's: in both cases, that is, one acts in accordance with a "commission"" (2000:198).

It can be concluded unless there are circumstances that are beyond control, every ST is translated according to a commission.

When it comes to the content of a commission, Vermeer lays the emphasis on two things: "the aim of the commission and the conditions under which the aim should be fulfilled including information like deadline and fee" (2000:235). These conditions should definitely be made explicit to both the client and the translator in order to avoid any possible misunderstandings.

**The translatum or translat** is another term for a TT which is used among skopos theorists. As indicated by Vermeer, any translational action produces a kind of "target text" and translation leads to a *translatum* (2000:227). In other words, translatum or translat is a term that is referred to indicate the product as a result of a translation (Schäffner, 2001:15).

As it has been indicated, since the process of translation heads towards a target culture situation or situations, word-for-word translation or transcoding the TT will not always be effective. To this end, the skopos of the translatum may be different from the source text's skopos. According to Vermeer, the factors that determine the translatum are the translator's viewpoint, the commission, and all the hierarchically ordered relevant factors (2004:228).

**Translational action** is a model that is presented by Holz-Mänttari. Holz-Mänttari suggests to analyse translational activities that take place during translation process. He takes into account the actions of "the initiator, the commissioner, the ST producer, the target text producer, the target text user, and the TT receiver" (<http://web.lettras.up.pt/mtt/tt/tt5.htm>).

By its very nature, *skopos theory* suggests that a determined skopos leads to an action and a product. Vermeer explains this connection in his article "*Skopos and Commission in Translational Action*" as follows: "An action leads to a result, a new situation or event, and possibly to a "new" object" (2000:227). He indicates that all the actions have an aim, a purpose.

**An optimal translation** is known as the best possible translation. We can talk about an optimal translation on the conditions that the TT is as ideal as possible for the client, the translator and the recipient. Vermeer defines the term "optimal with four definitions. These are:

- "one of the best translations possible in the given circumstances"
- "one of those that best realize the goal in question"
- "as good as possible in view of the resources available"
- (as good as possible) "in view of the wishes of the client" (Vermeer, 2000: 236).

To that end, an optimal translation can be obtained under given circumstances with an intention to realize the best possible product. If necessary, the client and

the competent translator enters into negotiations and necessary modifications are carried out to achieve this goal.

### **2.3. Arguments against Skopos Theory**

The criticism that are made against the *skopos theory* can be analysed in different categories. First of all, some scholars indicate that the theory does not include anything new. They suggest that functional theorists that proposed functional approaches have always existed. Accepting the truth that lies behind these arguments, Vermeer proposes that before Holz-Mänttari's and his approaches, it is not possible to find a consistent and holistic functional approach. He also indicates that some of the arguments are a result of having no or little knowledge about the progress that have been made in this field (Vermeer, 1996:13, 18).

Secondly, it is argued that there can be actions that have no aim and not all the actions are purposeful. They believe that it is not possible to speak of *skopos* of a text in these cases. Literary texts are given as an example of texts that have no aim. It is said that these texts are far more complex stylistically (Munday, 2008:81). In his answer, Vermeer indicates that even when an artist creates his artwork with no aim, he suggests that there is an intention to create something for itself which is also known as art for art's sake. It is also stated that if there is no aim, one cannot speak of an action (2000:234).

Another argument is that *skopos theory* does not consider linguistic nature of the ST. When the *skopos* of the text is fulfilled, they claim that the text cannot be adequate at the stylistic and semantic levels. It is also argued that the translation should be faithful to the ST. Christiane Nord answers these claims with his translation-oriented method. Nord mentions two types of translation: documentary translation and instrumental translation. In documentary translation, the lexical features and cultural elements of the ST are preserved. The recipient is aware of the translation when receiving the information. It can

be said that this approach is very similar to word-for-word and literal translation. In the other method which is called instrumental translation, the message is delivered without making the reader become aware of it (Nord, 2006:131). In this case, the function of the ST and the TT can be the same or different. According to the purpose of the translation, either methods can be applied.



### 3. CHAPTER

## **THE ANALYSIS OF *KATZUNG AND TREVOR'S PHARMACOLOGY EXAMINATION AND BOARD REVIEW* WITHIN THE FRAMEWORK OF SKOPOS THEORY**

In this chapter, the characteristics of *Katzung and Trevor's Pharmacology Examination and Board Review* will be presented at first. Then its translation will be analyzed within the framework of three main rules of skopos theory. According to Hans J. Vermeer, there are three main rules of the Skopos theory which are skopos rule, coherence rule and fidelity rule. These rules are comprehensively described in Chapter 2. However, they will also be explained along with the examples that are given below for each rule.

### **3.1. TEXTBOOK OF *KATZUNG AND TREVOR'S PHARMACOLOGY EXAMINATION AND BOARD REVIEW***

Comparing to professional pharmacology books, course books which are published for educational purposes include more descriptions with less unsophisticated, plain and understandable language. They include a great deal of medical terminology and pharmacological jargon. As it is the case in *Katzung and Trevor's Pharmacology Examination and Board Review*, pharmacology course books include details about the topics in each chapter as well as comprehensive examples, charts, illustrations and cases.

*Katzung and Trevor's Pharmacology Examination and Board Review* is a pharmacology textbook as well as a medical test preparation and review book. It delivers a lot of information on pharmacology by dividing it into specific topics. The chapter-based approach makes it functional and reader-friendly.

Other useful approaches that are used in the book are the objectives at the beginning of each chapter and skill-keeper sections at the end of chapters.

These parts of the textbook provide a checklist to students so that they can keep track of their studies.

Moreover, the textbook presents types of drugs and their functions illustrating them in diagrams, and figures. It also lists the drugs in tables which facilitates the recognition of drug names and categories.

Another outstanding feature of the book is practice questions which are more than 1150, their answers and explanations. It is beyond any doubt that these parts are essential for pharmacy and medical students who are preparing both for faculty examinations and for board examinations such as USMLE (United States Medical Licensure Examination) in the USA and TUS (Tıpta Uzmanlık Sınavı) in Turkey. It is indicated in the preface of the book that the questions in the textbook are in parallel with format which is used for USMLE and clinical vignette format used currently. Moreover, two examinations are included in Appendices II and III, and in Appendix I there is a list of key drugs that are most likely to appear in examinations. In that way, Appendix I is a learning aid including the descriptions of drugs' characteristics.

Furthermore, twenty chapters in the textbook include case studies which are designed for student's preparation for questions on clinical pharmacology.

*Katzung and Trevor's Pharmacology Examination and Board Review* is composed of sections containing a lot of information, explanation and facts about different subfields of pharmacology. Each chapter of the book introduces the subject clearly and avoids repetition. Following the introduction sections, the subject is developed thoroughly by definitions, explanations, figures, tables, charts, diagrams and illustrations.

There are some typical features of *Katzung and Trevor's Pharmacology Examination and Board Review* that makes the reader to understand the topic easily. Firstly, it consists of sixty three different chapters each of which

organized the topic well by headers and subheaders. Headers, subheaders, important information such as the names of the organs, and drugs are written in bold type. Contents section at the beginning of the book and the index section at the end of the book consisting of fifty five pages are other two features of *Katzung and Trevor's Pharmacology Examination and Board Review* as an informative text.

Although *Katzung and Trevor's Pharmacology Examination and Board Review* is a textbook and can be regarded as an informative text, the parts in the book that explains cases are narrated in a specific time order. They are written using dynamic words. Moreover, they sequence the events using adverbials such as first, second, then, etc. For this reason, in addition to informative text features, *Katzung and Trevor's Pharmacology Examination and Board Review* contains narrational sections. These sections are especially used in case histories to tell the background knowledge about people's health problems.

All in all, the textbook delivers the intended information from different aspects to support people who studies and/or works in the field of medicine and pharmacology.

In the following sections, the function of *Katzung and Trevor's Pharmacology Examination and Board Review* will be analyzed within the framework of skopos rule, coherence rule and fidelity rule.

### 3.2. Skopos Rule

According to skopos rule which is also the first and the most essential step of Vermeer's hierarchical order, TT is determined by its skopos and each text serves its purpose. Vermeer indicates that a text is translated in a way enabling the function of the text in the situation in which it is used and with the people who use it and in an expected way and function (2000:20) Therefore, translation is considered as an activity with an aim or purpose to fulfil its function on the intended addressee or audience of the translation. To achieve this, the translator is required to fulfil the purpose of translation in the intended society by providing a satisfying communication between the ST and the target audience. When it is achieved, it can be said that translation is in compliance with the skopos rule and translation techniques that are adopted during translation serves the aim, too.

In this study, the aim and the function of the translation of *Katzung and Trevor's Pharmacology Examination and Board Review* is questioned with regard to the utilization of the TT by the target society. *Katzung and Trevor's Pharmacology Examination and Board Review* is translated to cater the needs of course and test books in pharmacological studies because it is a comprehensive course book in the field of pharmacology. There are several indicators that support the idea that the translation of *Katzung and Trevor's Pharmacology Examination and Board Review* fulfils its function in the target culture. Firstly, as it is indicated before, it contains numerous detailed definitions, explanations, tables, charts, illustrations, figures, and examination section with multiple choice questions to help students study pharmacology and prepare for course and board examinations. Secondly, chapter-based approach helps users to review the book in conjunction with course notes and further studies. Therefore, students can easily focus on the chapter that they need to study. Moreover, review pages, checklists after each chapter, and practice questions followed by answers and explanations are helpful for any kind of examination related to pharmacology. The book also gives the names of important drugs and specific

drug groups, which supports the reader both during the study and in working life. Additionally, an updated list of the drugs that appear in examinations is provided at the end of the book. In the list, key features of the drugs and their descriptions can be found. Besides, there are questions followed by answers and necessary explanations after each chapter. Questions are either single best answer type, matching and extended matching type or in the clinical vignette format which has recently become widespread. Single best answer type questions are seen very often in examinations in Turkey, too. This type of questions are also used in USMLE (United States Medical Licensure Examination). Furthermore, as it is indicated before, there are two examinations in the appendices that cover the entire field of pharmacology. As mentioned, there are totally 1150 questions in the book accompanied with their answers. It also provides strategies for basic study and question formats that are applicable to all kind of examinations. Therefore, *Katzung and Trevor's Pharmacology Examination and Board Review* is not only a course book but it is also a substantial source for people who are in pursuit of preparation for pharmacology exams and the translation of the book supports Turkish students both in examinations that are conducted in Turkey such as course examinations and TUS (Examination for Speciality in Medicine).

*Katzung and Trevor's Pharmacology Examination and Board Review* is designed with the aim of strict discipline and following success. As a result, the authors engage learners with new information all the time. In the book, while definitions, explanations, figures and tables make the subject clear to the learner, examinations test them to comprehend it. Case studies mentioned in detail in the following paragraphs are very useful to understand the problems and solutions. In order to review the basic principles and information learned previously, the book provides *Skill Keepers* section at the end of each chapter, which is very useful both for university students studying pharmacology and medicine and students who prepare for the above mentioned examinations.

In order to foster the learning processes of students who study in medicine and pharmacology departments, a wide range of expository text structures are used in the textbook. Meyer indicates that there are five expository text structures. The use of these structures depend on the text and they are inseparable from the content. Topics are delivered to readers in detail with explanations and examples by using text structures. These text structures are "compare/contrast, cause/effect, problem/solution, description, and sequence" (1985:270). "Depending upon the information being conveyed, authors of an informative text may use multiple expository text structures in the same passage, switch abruptly from one structure to the next, or embed one text structure within another text structure" (Englert and Hiebert, 1984). Writers use *compare/contrast* to point out similarities or differences, *cause/effect* to express a causal relationship, *problem/solution* to organize the text into a problem part and an attempted solution to the problem, *description* to show setting information, and *sequence* to group ideas on the basis of order or time. These text structures are used to deliver the topics adequately and efficiently. In this way, they contribute the text to fulfil its skopos in both source and target culture. All these text structures are incorporated into *Katzung and Trevor's Pharmacology Examination and Board Review*. The most noticeable examples are as follows:

#### Example 1: Text Structure - Description

**ST:** "Synthesis and Transport of Thyroid Hormones: The thyroid secretes two iodine-containing hormones: triiodothyronine (T3) and thyroxine (T4). The iodine necessary for the synthesis of these molecules is derived from food or iodine supplements. Iodine uptake is an active process and the iodide ion is highly concentrated in the thyroid gland. The tyrosine residues of a protein, thyroglobulin, are iodinated in the gland to form monoiodotyrosine (MIT) or diiodotyrosine (DIT). Thyroxine (T4) is formed from the combination of two molecules of DIT, while triiodothyronine (T3) contains one molecule of MIT and one of DIT. Some T3 is released from the thyroid, but much of the circulating T3 is formed by the deiodination of T4 in the tissues. After release from the gland, both T3 and T4 are bound to thyroxine-binding globulin, a transport protein in the blood" (Trevor, Antony J. et. al., 2002:337).

**TT:** "Tiroid Hormonları, Sentezleri ve Taşınmaları: Tiroid, iyod içeren iki hormon salgılar: triiyodotironin (T3) ve tiroksin (T4). Bu moleküllerin sentezi için gerekli iyod besinlerden ve iyod destekleyicilerinden alınır. İyod alınımı aktif bir prosestir ve iyod iyonu tiroid bezlerinde yüksek oranda konsantre edilir. Tiroglobiilin proteininin tirozin rezidiileri monoiyodotirozin (MIT) ve diiyodotirozin (DIT) oluşturmak için bezlerde iyodlanırlar. Triiyodotironin (T3) bir molekül MIT ve iki molekül DIT içerirken, tiroksin (T4) iki molekül DIT'in kombinasyonundan oluşur. T3'ün bir kısmı tiroidten salınır ancak, dolaşımdaki T3'ün büyük kısmı dokularda T4'iin deiyodinasyonundan oluşur. Hem T3 hem de T4 bezden salındıktan sonra kanda bir taşıyıcı protein olan tiroksin bağlayıcı globüline bağlanırlar" (Akkan, 2002:337).

As *Katzung and Trevor's Pharmacology Examination and Board Review* is a textbook, it contains numerous descriptions and explanations. One of these descriptions are given as an example above. In this first excerpt, thyroid hormones T3 and T4 are described and the process of their secretion is explained. Since *Katzung and Trevor's Pharmacology Examination and Board Review* is a textbook, it includes descriptions of diseases and treatments. Another example of description is given below:

#### Example 2: Text Structure - Description

##### **ST:**

##### **"INSULIN**

A. Physiology: Insulin is synthesized as a prohormone, proinsulin, an 86-amino-acid single chain polypeptide. Cleavage of proinsulin and cross-linking result in the two-chain 51-peptide insulin molecule and a 31-amino-acid residual C-peptide. Neither proinsulin nor C-peptide appear to have any physiologic actions" (Trevor, Antony J. et. al., 2002:360).

##### **TT:**

##### **"İNSÜLİN**

A. Fizyolojisi: İnsülin, 86 aminoasid içeren, tek polipeptid zincirli bir prohormon olan proinsülin şeklinde sentezlenir. Proinsülinin ve çapraz bağların kırılmasıyla 51-peptid iki zincirli insülin molekülü ve 31-amino asidli C-peptidi oluşur. Ne proinsülinin ne de C-peptidin hiçbir fizyolojik etkisi yoktur" (Akkan, 2002:360).

Similarly, in this example, how insulin is synthesized is described.

Since the book is used to support students in medicine and pharmacology faculties, it also includes sections that teach students to solve medical problems caused by chemicals or drugs. Examples regarding problems and solutions are given below:

**Example 3: Text Structure: Problem/Solution**

**ST:** "Overdosage: Overdosage causes severe respiratory and cardiovascular depression; these potentially lethal effects are more likely to occur with alcohols, barbiturates, and carbamates than with benzodiazepines. Management of intoxication requires maintenance of a patent airway and ventilatory support. Flumazenil may reverse CNS depressant effects of benzodiazepines, zolpidem, and zaleplon but has no beneficial actions in overdose usage; other sedative-hypnotics" (Trevor, Antony J. et. al., 2002:208).

**TT:** "Doz aşımı: Aşırı doz ciddi respiratuvar ve kardiyovasküler depresyona sebep olur; bu ölümcül etkiler benzodiazepinlerden çok alkol, barbitüratlar ve karbamatlarla alındığında potansiyelize olur. Zehirlenme tedavisinde airway ve ventilator uygulanması gerekebilir. Benzodiazepinlerin, Zolpidem ve zaleplonun SSS depressan etkilerini flumazenil geri dondururken, diğer hipnosedatiflerin aşırı dozunda flumazenilin herhangi bir faydası görülmemiştir" (Özgön, 2002:208).

In this example, the problem of overdose and its solution is explained. In order to deliver the information related to problems and their most appropriate solutions correctly and adequately, the parts in the book which include the text structure of problem and solution will be useful for people who study and work in the field of pharmacology. Below is another example of this text structure:

#### Example 4: Text Structure: Problem/Solution

**ST:** "Chronic mercury poisoning: Chronic mercury poisoning may occur with inorganic or organic mercury. Inorganic mercury poisoning in the chronic form usually presents as a diffuse set of symptoms involving the gums and teeth, gastrointestinal disturbances, and neurologic and behavioral changes. When mercury was used in the hat-making industry, the behavioral effects (erethism) were so common that they gave rise to the epithet "mad as a hatter." Chronic inorganic mercury intoxication has been treated with penicillamine and dimercaprol" (Trevor, Antony J. et. al., 2002:513).

**TT:** "Kronik civa zehirlenmesi: Kronik civa zehirlenmesi organik veya inorganik civa ile oluşur. Kronik form inorganik civa zehirlenmesi genelde diş ve dişetleri, gastrointestinal rahatsızlıklar, nörolojik ve davranış değişikliklerin de dahil olduğu yaygın belirtiler topluluğuyla kendini gösterir. Civa şapka yapım endüstrisinde kullanıldığı zamanlarda davranış üzerine olan etkileri (eretizm) oldukça yaygındı ve bu yüzden lakap olarak "deli şapka işçisi" verildi. Kronik inorganik civa zehirlenmesi penisilamin ve dimerkaprol ile tedavi edilmektedir" (Afşar, 2002:513).

This excerpt explains why chronic mercury occurs and how it can be treated. In this way, it presents causes of a problem and gives its solution.

As it is indicated before, different text structures can be used in an informative text to convey the message clearly. In *Katzung and Trevor's Pharmacology Examination and Board Review*, time order and chronological text structures are also used especially in case stories as shown in the example below:

### Example 5: Text Structure - Time Order/Chronological

**ST:** "A 42-month-old child was brought to a hospital emergency room with fever and signs suggestive of bacterial meningitis. Two months earlier, she had been treated for otitis media with cefaclor and had developed an urticarial rash. There was no record of vaccination against Haemophilus influenzae type 0. On hospitalization, the child was treated with ampicillin and chloramphenicol for 72 hours and then placed on chloramphenicol alone on the basis of the results of microbiology laboratory tests. After 10 days of antibiotic treatment, the patient was afebrile and cerebrospinal fluid was sterile, with normal protein and glucose levels. Drug treatment was discontinued, but after 2 days she developed vomiting and fever to 40,5 °C. Cerebrospinal fluid culture was sterile, but counterimmuno-electrophoresis (CIE) was positive for H influenzae type b polyribosylribitol phosphate antigen. The patient was treated for 10 days with ceftriaxone and remained afebrile after the second day. At completion of therapy, cerebrospinal fluid was sterile, CIE was negative, and the white cell count and protein levels were returning toward the normal range" (Trevor, Antony J. et. al., 2002:453).

**TT:** "42 aylık bir çocuk ateş ve bakteriyel menenjit habercisi semptomlarla hastanenin acil servisine getirilmiştir. İki ay önce, sefaklor ile otitis media tedavisi görmüş ürtiker döküntüsü geliştirmiştir. Haemophilus influenzae tip 0 ye karşı herhangi bir aşı kaydı bulunmamaktadır. Hastaneye yattıktan sonra, çocuğa 72 saat süreyle ampisihn ve Kloramfenikol tedavisi verilmiş ve daha sonra da mikrobiyoloji laboratuvarından gelen sonuçlara dayanılarak tek başına Kloramfenikol tedavisine geçilmiştir. 10 günlük antibiyotik tedavisinin ardından hastanın ateşi düşmüş ve serebrospinal sıvısı steril olup protein ve glikoz seviyeleri normaldir. İlaç tedavisi kesilmiştir ancak 2 gün sonra çocuğun ateşi 40,5°C'ye çıkmış ve kusma göstermiştir. Serebrospinal sıvı kültürü sterildir ancak kontrimmunoelktroforezi (CIE) H influenzae tip b poliribosilribitol fosfat antijeni için pozitifdir. Hasta 10 gün süreyle seftriakson tedavisine tabi tutulmuş ve ateşi ikinci gün sonunda düşmüştür. Tedavi tamamlandıktan sonra serebrospinal sıvı sterildir, CIE negatiftir ve akyuvar sayılan ve protein seviyeleri normal aralığa dönmektedir" (Akkan, 2002:453 ).

In this excerpt, a story of a patient is narrated. Some signal words are used to indicate the chronological order of the story. These words are *"two months earlier"*, *"on hospitalization"*, *"for 72 hours"*, *"after 10 days"*, *"after 2 days"*, *"for 10 days"*, *"for 10 days"*, *"after the second day"*, and *"at completion of therapy"*. Another text structure which is used in the textbook is comparison and contrast. An example of this structure is as follows:

### Example 6: Text Structure - Comparison/Contrast

**ST:** "B. Digitalis: The actions of digitalis were discussed in Chapter 13. The cardiac parasympatho-mimetic action of digoxin is sometimes exploited in the treatment of rapid atrial or AV nodal arrhythmias. In atrial flutter or fibrillation, digitalis slows AV conduction sufficiently to protect the ventricles from excessively high rates. In AV nodal reentrant arrhythmias, digitalis may exert enough depressant effect to abolish the arrhythmia. The latter use of digitalis has become less common since the introduction of calcium channel blockers and adenosine as antiarrhythmic drugs.

C. Potassium Ion: Potassium depresses ectopic pacemakers, including those caused by digitalis toxicity. Hypokalemia is associated with an increased incidence of arrhythmias, especially in patients receiving digitalis. Conversely, excessive potassium levels depress conduction and can cause reentry arrhythmias. Therefore, when treating arrhythmias, serum potassium should be measured and if abnormal, normalized.

D. Magnesium Ion: Magnesium has not been as well studied as potassium but appears to have similar depressant effects on digitalis-induced arrhythmias. Magnesium also appears to be effective in some cases of torsade de pointes arrhythmia" (Trevor, Antony J. et. al., 2002:139).

**TT:** "B. Dijitaler: Dijitalerin etkileri Bölüm 13'de tartışılmıştır. Digoksinin kardiyak parasempatomimetik etkisi hızlı atrial ya da AV nodal aritmilerin tedavisinde bazen çok başarılıdır. Atrial flutter veya fibrilasyonda dijitaler ventrikülleri aşırı yüksek hızdan korumak için AV iletiyi yeterli miktarda yavaşlatırlar. AV nodal reentry aritmilerinde dijitaler aritmeyi durdurmak için yeterli baskılayıcı etki gösterirler. Kalsiyum kanal blokerleri ve adenozinin antiaritmik ilaç olarak tanınmalarından beri dijitalerin diğer kullanımları daha az yaygındır.

C. Potasyum İyonu: Potasyum, dijital toksisitesi nedeniyle olanlar da dahil, ektopik pacemakerları baskılar. Özellikle dijital alan hastalarda, hipokalemi aritmi görülme sıklığında artış ile birlikte seyreder. Karşıt olarak aşırı potasyum seviyesi iletiyi baskılar ve reentry aritmilerine neden olabilir. Bu nedenle aritmiler tedavi edilirken serum potasyum seviyesi ölçülmelidir ve anormalse düzeltilmelidir.

D. Magnezyum İyonu: Magnezyum potasyum kadar iyi fakat dijitalerle uyarılmış aritmiler üzerinde benzer baskılayıcı etkileri olduğu görülmektedir. Magnezyumun torsade de pointes aritmisi üzerinde de etkili olduğu görülmektedir" (Kutluata, 2002:139).

In this excerpt, three different solutions to arrhythmias are presented and compared. The terms that are used to compare are "*less common*", "*as well studied as*", "*similar depressant effects*", and "*also*". To indicate contrast the

linker *conversely* is also used in the example. In this way, it compares the similarities among chemicals and shows the differences among them.

The following examples show that the textbook includes explanations that indicates the causes of situations.

#### Example 7: Text Structure - Cause

**ST:** "The phenylisopropylamines may produce mild to severe CNS toxicity, depending on dosage. In small doses, they induce nervousness, anorexia, and insomnia; in higher doses, they may cause anxiety, aggressiveness, or paranoid behavior. Convulsions may occur. Peripherally acting agents have toxicities that are predictable on the basis of the receptors they activate. Thus,  $\alpha_1$  agonists cause hypertension and  $\beta_1$  agonists cause sinus tachycardia and serious arrhythmias. Beta<sub>2</sub> agonists cause skeletal muscle tremor. It is important to note that none of these drugs is perfectly selective; at high doses  $\beta_1$ -selective agents have  $\beta_2$  actions and vice versa. Cocaine is of special importance as a drug of abuse: its major toxicities include cardiac arrhythmias or infarction and convulsions. A fatal outcome is far more common with acute cocaine overdose than with any other sympathomimetic" (Trevor, Antony J. et. al., 2002:83).

**TT:** "Fenilizopropilaminler doza bağılı olarak hafiften şiddetliye kadar değişen SSS toksisitesine neden olurlar. Düşük dozlarda sinirlilik, anoreksi, uykusuzluk, yüksek dozlarda anksiyete, agresiflik veya paranoid davranışa neden olurlar. Konvülsyonlar görülebilir. Periferik etkili ajanlarının toksisiteleri aktive ettikleri reseptörlere bağlı olarak tahmin edilebilir. Bu nedenle  $\alpha_1$  agonistler hipertansiyona,  $\beta_1$  agonistler sinüzal taşikardi ve ciddi aritmilere neden olur. Beta<sub>2</sub> agonistler iskelet kası tremoru yapar. Şunun altını çizerek belirtmek gerekir ki bu ilaçlardan hiçbirisi tamamen selektif değildirler; yüksek dozlarda  $\beta_1$  selektif ajanların  $\beta_2$  aktiviteleri vardır ve tam terside doğrudur. Kokain ilaç suistimali yüzünden ayrı bir önem taşımaktadır: başlıca toksisiteleri; kardiyak aritmi veya infarkt ve konvülsyonlardır. Aşırı doz kokain alımının ölümcül bir sonuca neden olması diğer sempatomimetiklere göre daha sıktır" (Özyazgan and Afşar, 2002:83).

The symptoms that are caused by phenylisopropylamines are explained in the excerpt below.

### Example 8: Text Structure - Cause

**ST:** "Toxicity of Nitrates and Nitrites: The most common toxic effects of nitrates are the responses evoked by vasodilation. These include tachycardia (from the baroreceptor reflex), or thostatic hypotension (a direct extension of the venodilator effect), and throbbing headache from meningeal artery vasodilation" (Trevor, Antony J. et. al., 2002:113).

**TT:** "Nitrat ve Nitritlerin Toksisitesi: Nitratların en sık rastlanan toksik etkileri vazodilatasyonla ortaya çıkar. Taşikardi (baroreseptör refleksi), ortostatik hipotansiyon (direkt venodilatör etki ile) ve meningeal arter vazodilatasyonundan dolayı şiddetlidir" (Kutluata, 2002:113).

Similar to the previous one, the causes of tachycardia, thostatic hypotension, and throbbing headache are explained in this example. It is seen that, the textbook includes the causes of illnesses, symptoms, and toxications. By delivering the causes, related topics are made clear to medicine and pharmacy students.

In the following example, the results of a specific kind of drug are given.

### Example 9: Text Structure: Effect

**ST:** "Blockers of ganglionic nicotinic receptors act like competitive pharmacologic antagonists, though there is evidence that they can also block the nicotinic channel pore. These drugs were the first successful agents for the treatment of hypertension. Hexamethonium (C6, a prototype), mecamylamine, and several other ganglion blockers were extensively used for this disease. Unfortunately, the adverse effects of ganglion blockade in hypertension are so severe (both sympathetic and parasympathetic divisions are blocked) that patients were unable to tolerate them for long periods (Table 8-4). Trimethaphan was the ganglion blocker most recently used in clinical practice, but it too has been almost abandoned. It is poorly lipid-soluble, inactive orally, and has a short half-life. It was used intravenously to treat severe accelerated hypertension (malignant hypertension) and to produce controlled hypotension" (Trevor, Antony J. et. al., 2002:71).

**TT:** "Ganglionik nikotinik reseptor blokerleri nikotinik kanal porlarını da bloke edebildiklerine ait kanıtlar olmasına rağmen kompetitif farmakolojik antagonist gibi etki gösterirler. Bu ilaçlar hipertansiyon tedavisinde kullanılan ilk başarılı ilaçlardı. Heksametonyum (C6, bir prototip), mekamilamin ve diğer bir 50k ganglion blokeri yoğun şekilde hipertansiyon tedavisinde kullanılmışlardı. Ancak hipertansiyonda ganglion blokajının yan etkileri çok ciddi olduğu için (hem sempatik hem de parasempatik sistemler bloke olur), hastalar uzun süre bu ilaçları tolere edemezler (Tablo 8-4). Trimetazan yakın zamanlara kadar çok kullanılan bir ganglion blokeriydi fakat neredeyse tamamen kullanımdan kalktı. Bu ilaç zayıf yağda çözünür, oral yolla alındığında inaktif ve kısa ömürlüdür. Şiddetli hipertansiyon (malign hipertansiyon) vakalarının tedavisinde IV olarak kontrollü hipotansiyon oluşturmak için kullanılırdı" (Özyazgan and Afşar, 2002:71).

In this example, the effects of blockers of ganglionic nicotinic receptors are explained to deliver the details about the related topic efficiently and adequately.

As shown, all text structures are used in *Katzung and Trevor's Pharmacology Examination and Board Review* to make the content of the textbook clear to the reader. Therefore, it can be concluded that the book delivers the topics in a comprehensible way using an appropriate text structure which the topic requires.

All these features of *Katzung and Trevor's Pharmacology Examination and Board Review* are in parallel with the necessity of a comprehensive pharmacology source at the faculties of pharmacology and medicine in Turkey. It is clear that *Katzung and Trevor's Pharmacology Examination and Board Review* was translated into Turkish with the skopos of helping the students both during the study and for preparation of all kind of national and international examinations. Therefore, it can be said that it fulfils its function on the intended addressee by explaining the topics in detail using all expository structures.

Therefore, it is understood that the translation of *Katzung and Trevor's Pharmacology Examination and Board Review* serves the needs of the readers and skopos rule is achieved since the function or the skopos of the TT is

determined by the readers' or the client's needs and translation is determined by its skopos.

### 3.3. Coherence Rule

The second rule which is put forward by Vermeer is the coherence rule. According to the coherence rule, the TT "must be interpretable as coherent with the target text receiver's situation" (Vermeer, 1984:119). In other words, the TT must be translated coherently for the TT receivers, considering their knowledge and circumstances. As Reiss and Vermeer indicate the TT receiver's situation has a role to shape the coherence of the TT (1984:113). Therefore, the TT must be translated taking the background of the target receiver into account. Baker also states that "the coherence of a text, 'depends on the hearer's or receiver's expectations and experience of the world'" (1992: 219). As a result, since the receiver's knowledge and experience play a role in determining whether a text is coherent or not, coherence may be different for the ST and TT reader.

In terms of the coherence rule, the ST is merely an offer of information for the translator, who makes it meaningful for the receiver. By making the TT coherent and accurate for the audience, effective communication can be achieved. Otherwise, communication and comprehension breakdowns may be resulted in this respect.

In the following section, sentences that are taken from *Katzung and Trevor's Pharmacology Examination and Board Review* are analyzed from the perspective of coherence rule.

**Example 1:**

**ST:** "Size and molecular weight (MW): Drugs in common use vary in size from MW 7 (lithium) to over MW 50.000" (trombolytic enzymes)" (Trevor, Anthony J. et. al.,2002:1).

**TT:** "Büyüklik ve molekül ağırlık (MA): Genel kullarımdaki ilaçların molekül ağırlığı 7D\* (lityum) ile 50000D (trombolik enzimler) arasında deęiřir"

\*D: Dalton (Özyazgan, 2002:1).

In the first example above, molecular weight unit and its abbreviation, MW are used in the ST; however, dalton molecular weight unit and its abbreviation are used in the TT although it is not indicated in the ST. In other words, instead of MA which stands for "*molekül ağırlık*" in TL, dalton which has the same meaning as molecular weight is used. The usage of the word "*dalton*" enables the translation render a more clear and coherent message to the target reader with the same impact as on the source reader. Furthermore, it provides a sufficiently coherent TT according to situational contexts and knowledge of receivers.

**Example 2:**

**ST:** "a. Oral (swallowed): The oral route offers maximum convenience, but absorption may be slower and less complete than when parenteral routes are used. Ingested subject to the first-pass effect, in which a significant amount of the agent is metabolized in the gut wall and the liver before it reaches the systemic circulation. Thus, some drugs have low bioavailability when given orally  
b. Intravenous: The intravenous route offers instantaneous and complete absorption (by definition, bioavailability is 100%). This route is potentially more dangerous, however, because of the high blood levels that are produced if administration is too rapid  
c. Intramuscular: Absorption from an intramuscular injection site is often (not always) faster and more complete (higher bioavailability than with oral administration. Large volumes (eg, 5 mL into each buttock) may be given. First-pass metabolism is avoided.  
d. Subcutaneous: The subcutaneous route offers slower absorption than the intramuscular route. Large volume bolus doses are less feasible. First-pass metabolism is avoided.  
e. Buccal and sublingual: The buccal route (in the pouch between gums and cheek)

permits direct absorption into the systemic venous circulation, bypassing the hepatic circuit and first-pass metabolism. This process may be fast depending on the physical formulation of the product The sublingual route (under the tongue) offers the same features as the buccal route" (Trevor, Anthony J. et. al.,2002:4).

**TT:** "a. Oral (yutma): Parenteral uygulamaya göre absorpsiyon daha yavaş ve daha az olmasına rağmen oral uygulama en güvenilir yoldur. Ağızdan alınan ilaçların büyük bir kısmı sistemik geçmeden önce barsak duvarı ve karaciğerde önemli miktarda yıkılırlar. Bu olaya ilk geçiş etkisi denir. Bundan dolayı bazı ilaçlar oral verildiğinde biyoyararlanımları düşüktür.

b. Intravenöz (İV): İntravenöz uygulama çok hızlı ve tam absorpsiyon sağlar (biyoyararlanım yaklaşık %100). Çok hızlı verildiğinde ilacın kan seviyesi yüksek düzeylere ulaşacağından bu uygulama potansiyel tehlike riski taşır.

c. İntramüsküler (İM): İlaçların absorpsiyonu oral yola göre genellikle (her zaman olmayabilir daha çabuk ve büyük oranda gerçekleşir (biyoyararlanım daha fazla). Bu yoldan büyük hacimde ilaç verilebilir (her kalçadan en az 5 ml). İlaçlar ilk geçiş etkisinden korunur.

d. Subkutan (SC): Absorpsiyon intramüsküler yola göre daha yavaştır. Büyük hacimde bolus olarak ilaç verileceğinde bu yol tercih edilmez. İlaçlar ilk geçiş etkisinden korunur.

e. Bukkal (ağız içi) ve sublingual: Bukkal yolla (dişeti ile yanak arasındaki boşluktan) verildiğinde ilaç enderohepatik sıklusa ve ilk geçiş etkisine uğramadığından dolayı direkt sistemik dolaşıma geçer. Bu geçişin hızı ilacın fizikokimyasal özelliklerine bağlıdır. Sublingual yol (dil alt) bukkal yol ile aynı özelliklere sahiptir" (Özyazgan, 2002:4).

As it is a well-known fact drugs can be introduced into the body in different ways and these different methods have specific purposes. In the example given above, methods of administering drugs are introduced. The origin of the words intravenous, intramuscular and subcutaneous is Latin. Venous was originated from Latin *venosus* 'having many veins' and muscle is a word that is derived from *mus*, *musculus* in Latin. cutaneous (adj.) In addition, the prefix *intra-* comes from Latin *intrā*-which means "within, inside, on the inside and from Latin preposition *sub* "under, below, beneath, at the foot of" It is seen that these words are used without their abbreviations in the original text; however, the abbreviations of the words (İV,İM, and SC) are given as extra information in the TT. As it can be quite difficult for medicine and pharmacy students to learn and memorize anatomical words, the usage of abbreviations helps students apprehend the topic more easily. Besides, the abbreviations of the words are quite commonly used among health care professionals and providers. Further to

the abbreviations above, the last item could also be suggested as an indicator of a coherent translation. The terms 'buccal and sublingual' are translated as "*bukkal (ağız içi) ve sublingual*". Although "*buccal*" means "*ağız içi*" in Turkish, an additional description is also included. By explaining "*buccal*" with words "*ağız içi*" in parantheses, the translator has employed a method to make the text more clear to the reader. Therefore, including the abbreviations, the explanations of the ways of administering drugs are translated coherently.

|                                                                                                                                                    |
|----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 3:</b>                                                                                                                                  |
| <b>ST:</b> " <i>Mrs. Jones is admitted to General Hospital</i> with pneumonia due to gram negative bacteria" (Trevor, Anthony J. et. al.,2002:26). |
| <b>TT:</b> " <i>Selim Bey</i> gram negative bakterilere bağlı olarak gelişen pnömoni nedeniyle <i>hastaneye yatırılır</i> " (Özyazgan, 2002:26).   |

As it is indicated before, according to the coherence rule, "TT must be translated in such a way that it is coherent for the target receivers". To make the ST coherent for the receivers, proper names are replaced with common Turkish names in TT. In the example, "*Mrs. Jones*", is replaced with "*Selim Bey*". Another change that captures the attention is that "*General Hospital*" is not translated literally as "*Genel Hastane*" which is not a common usage in the Turkish language. Instead, only "*hastane*" is used in the TT. Besides these, it could also be noted that instead of translating "*is admitted to*" as "*kabul edilir*", it has been translated as "*yatırılır*" which means "*to put somebody to bed, to lay down*" in English. Although "*hastaneye kabul etmek*" is literal translation of "*to admit somebody to hospital*", "*hastaneye yatırmak*" is a more common usage in the context. Therefore, it is in compliance with the coherence rule of skopos theory.

|                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------|
| <b>Example 4:</b>                                                                                                       |
| <b>ST:</b> " <u>Ms. Brown</u> <u>has had</u> myasthenia gravis for several years" (Trevor, Anthony J. et. al.,2002:26). |
| <b>TT:</b> " <u>Nilüfer Hanım</u> birkaç yıldır Myastenia gravis <u>hastasıdır</u> " (Özyazgan, 2002:26).               |

Similarly, the proper name "*Ms. Brown*" in the source sentence is replaced with "*Nilüfer Hanım*" which is a Turkish female name. Moreover, there is a shift in the structure of the verb: "*has had*" which means "*sahiptir*" in Turkish is not translated literally, yet another common usage "*hastasıdır*" is used instead of "*sahiptir*". These changes show that the translator is relatively free in his/her choices about the words to make the TT easier to read and understand for target readers. In this way, it can be said that TT is a product of target culture and it only caters the needs of target culture.

|                                                                                                                           |
|---------------------------------------------------------------------------------------------------------------------------|
| <b>Example 5:</b>                                                                                                         |
| <b>ST:</b> " <u>Mr. Green</u> has just been diagnosed with myasthenia gravis" (Trevor, Anthony J. et. al.,2002:64).       |
| <b>TT:</b> " <u>Gökhan Bey</u> 'e kısa bir süre önce myastenia gravis teşhisi koyulmuştur" (Özyazgan and Afşar, 2002:64). |

In the example above, "*Mr. Green*" is replaced with "*Gökhan Bey*" which is another common male name in Turkish. Apart from that, the other parts of the sentence has been translated literally: "*just*" is translated as "*kısa bir süre önce*" and "*has ... been diagnosed with myasthenia gravis*" is translated as "*myastenia gravis teşhisi koyulmuştur*". It leads to the conclusion that the translator is supposed to employ different translation strategies and omit, give extra information or replace words where necessary in order to translate ST coherently.

|                                                                                                                                                                                                                                                                                                                                                             |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 6:</b>                                                                                                                                                                                                                                                                                                                                           |
| <b>ST:</b> "Deprivation of opioids in physiologically dependent individuals leads to an abstinence syndrome that includes lacrimation, rhinorrhea, yawning, sweating, weakness, <i>gooseflesh</i> (" <i>cold turkey</i> "), nausea and vomiting, tremor, muscle jerks (" <i>kicking the habit</i> "), and hyperpnea" (Trevor, Anthony J. et. al.,2002:289). |
| <b>TT:</b> "Fizyolojik olarak bağımlı olan kişilerde opioidlerin kesilmesi lakrimasyon, rinore, esneme, terleme, zayıflık, <i>kaz derisi</i> , bulantı, kusma, tremor, kas seyirmeleri ve hiperpne ile karakterize olan duruma yol açar" (Özgön, 2002:289).                                                                                                 |

In this example, it is seen that the terms "*cold turkey*" and "*kicking the habit*" were not translated into TT as the translation of these expressions have different meanings than indicated in the ST. When "*cold turkey*" is translated into Turkish as "*soğuk hindi*", it means the drop in prices abruptly to curb high inflation. Therefore, it is not a medical, but an economical term in target culture. Similarly, although "*kicking the habit*" means "*powerful muscle spasms*" in English, it will not have the same meaning when it is translated into Turkish literally. Therefore, these words are omitted to avoid illogical relation in the TT. In this way, the intratextual coherence is accomplished in this sentence.

|                                                                                                                                                                             |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 7:</b>                                                                                                                                                           |
| <b>ST:</b> " <i>Search high and low through drug information and you will find no data on the elimination half-life of ethanol</i> " (Trevor, Anthony J. et. al.,2002:215). |
| <b>TT:</b> " <i>Etanolün yarılanma ömrüne <u>baktığınızda</u> herhangi bir bulgu olmadığını göreceksiniz</i> " (Özgön, 2002:215).                                           |

It may be noticed, in the first example above, that although the main content of the original text has been preserved in TT, there are certain omissions in the translation of the sentence. The idiom "*to search high and low*" means "*didik didik aramak, her yere bakmak*" in Turkish. However, as it is seen in the example, it has been translated as "*baktığınızda*" which means "*when you look*

at" in English. Despite the fact that the idiom hasn't been translated in the target sentence, translation is adequate and sounds natural in TL.

Apart from the examples listed above, in several cases, terms are translated with additional information usually by giving another explanatory word which makes the message clear in the SL. The examples are as follows:

|                                                                                                                                                                                                                                                                                                                               |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 8:</b>                                                                                                                                                                                                                                                                                                             |
| <p><b>ST:</b> "Pupillary dilation, not constriction, is a character atropine effect, as indicated by the origin of the name <u>belladonna</u> ("<u>beautiful lady</u>") use of extracts of the from the ancient cosmetic <i>Atropa belladonna</i> plant to dilate the pupils" (Trevor, Anthony J. et. al.,2002:76).</p>       |
| <p><b>TT:</b> "Atropinin karakteristik etkisi pupiller konstriksiyon değil dilatasyondur. "<u>bella dona</u>" (<u>güzel avrat</u>) orjinal isminin belirttiği gibi; <i>Atropa belladonna</i> bitkisinin ekstratları kozmetik olarak antik çağda pupilleri genişletmek için kullanılmıştır" (Özyazgan and Afşar, 2002:76).</p> |

In this example, the name of the plant "*belladonna*" has been used in the TT. "*Beautiful lady*" refers to the word which is used instead of belladonna in colloquial language. This word has been translated as "*güzel avrat*" instead of translating it as "*güzel kadın*" which means "*beautiful lady*" in Turkish. In this way, the translator tries to create the same impact and achieve a coherent translation in the TL.

|                                                                                                                                                                                                            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 9:</b>                                                                                                                                                                                          |
| <p><b>ST:</b> "Overdosage toxicity: Most of the commonly used anticonvulsants are CNS depressants, and respiratory depression may occur with <u>overdosage</u>" (Trevor, Anthony J. et. al.,2002:222).</p> |
| <p><b>TT:</b> "<u>Overdoz (aşırı alım)</u> toksisitesi: Kullanılan bir çok antikonvülzanın overdozunda SSS ve solunum depresyonu oluşabilir" (Özgön, 2002:222).</p>                                        |

It is seen in this example that both overdosage and its translation overdoz are used as technical terms. However, in Turkish translation of the word "*aşırı alım*" has also been added in order to make it more clear to the target reader. This shows that the translation aims at providing a coherent TT by rendering it as comprehensible as possible.

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 10:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <p><b>ST:</b> "Local anesthesia is the condition that results when sensory transmission the to CNS is blocked. Local anesthetics from a local area of constitute chemically similar agents that block the sodium of excitable membranes. Because these drugs can be locally by <u>topical application</u> or by injection in the target area, the anesthetic effect can be restricted to a localized area, the cornea or an arm. When intravenously, these drugs have effects on given other drugs in other groups, eg, antihistamines and beta-blockers, have sig local anesthetic effects" (Trevor, Anthony J. et. al.,2002:238).</p> |
| <p><b>TT:</b> "Lokal anestezi, duyuşal iletinin vücudun bir yerinden SSS'ne ulaşamaması durumudur. Lokal anestezişler uyarılabilir dokuların sodyum kanallarını bloke eden, kimyasal olarak birbirine benzer bir ajanlar gurubu. dur. Bu ilaçlar <u>yüzeyşel (topik)</u> veya hedef alana enjeksiyon şeklinde lokal olarak anesteziş etki bir bölge ile, örn. kornea veya kol dokulara da etkilidirler. Başka gruplar altında sinifflanan birçok ilacın da, örn. diğşer antihistaminikler ve beta blokerlerin belirgin lokal anesteziş etkileri vardır" (Özgön, 2002:238).</p>                                                          |

Similar to the previous example, the term *topical* has been translated as "*yüzeyşel (topik)*" and both Turkish equivalence of the word "*yüzeyşel*" and the word which has been borrowed from TL "*topik*" has been used in translation. It can be stated that both words are used in the TT in order to make it coherent for the reader. Thus it can be indicated that the TT is in compliance with the coherence rule of skopos theory.

**Example 11:**

**ST:** "Certain chronic diseases of the CNS (eg, cerebral palsy, multiple sclerosis, stroke) are associated with abnormally high reflex in the neuronal pathways that control skeletal muscle; the result is painful spasm. Bladder and anal sphincter control are affected in most cases and may require autonomic drugs for management. In circumstances, acute injury or inflammation of muscle leads to spasm and pain. Such temporary spasm can sometimes be Reduced with appropriate drug and therapy.

The goal of spasmolytic therapy in both chronic and acute conditions is reduction of excessive skeletal muscle tone without reduction of strength. Reduced spasm results in reduction of pain and improved mobility" (Trevor, Anthony J. et. al.,2002:247).

**TT:** "MMS'in birçok kronik hastalığında (serebral palsy, multipl sklerosis, inme) iskelet adelesini kontrol eden sinir yollarında (yolaklarında) anormal refleks aktivite artışı olur; sonuç ağrılı spazmdir. Birçok olguda mesane ve anal sfinkter kontrolü de etkilenir ve tedavisi otonomik ilaçları gerektirir. Akut yaralanma ve ya adale inflamasyonunun olduğu durumlarda da spazm ve ağrı olur. Bu tür geçici spazmlar uygun ila. tedavisi ile azaltılabilir.

Spazmolitik tedavinin amacı, kronik ya da akut durumlarda, iskelet adale kuvvetini azaltmadan aşırı artmış tonusun azaltılmasıdır. Azalan spazm sonucunda ağrı azalır ve hareketlilik (mobilite) artar" (Özgön, 2002:247).

In this example, "*neuronal pathways*" has been translated as "*sinir yollarında (yolaklarında)*" and "*mobility*" has been translated as "*hareketlilik (mobilite)*". In both translation, rather than translating the word word-for-word, the terms are explained with extra words: "*yolaklarında*" and "*hareketlilik*" to maintain intertextual coherence in the ST.

|                                                                                                                                                                                                                                                                                                                 |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 12:</b>                                                                                                                                                                                                                                                                                              |
| <p><b>ST:</b> "Insulin <u>delivery</u> systems: The standard mode of insulin therapy is subcutaneous injection with conventional <u>disposable</u> needles and syringes. Other, more convenient, means of administration are either available or in clinical trials" (Trevor, Anthony J. et. al.,2002:361).</p> |
| <p><b>TT:</b> "İnsülin <u>sunan (delivery)</u> sistemler: insülin tedavisinin standart uygulaması klasik, <u>disposable (tek kullanımlık)</u> iğne ve şırınga ile subkutan enjeksiyondur. Diğer daha uygun uygulama araçları hem vardır hem de klinik araştırma aşamasındadır" (Akkan, 2002:361).</p>           |

This example shows that the term delivery has been translated as "*sunan (delivery)*" and "*disposable*" has been translated as "*disposable (tek kullanımlık)*". In this way, both English and Turkish words are kept in translation to make it more comprehensible for the reader especially for medicine and pharmacy students.

|                                                                                                                                                                                                                                             |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 13:</b>                                                                                                                                                                                                                          |
| <p><b>ST:</b> "Toxic effects of vancomycin include chills, fever, phlebitis, ototoxicity, and nephrotoxicity. Rapid intravenous infusion may cause <u>diffuse flushing ("red man syndrome")</u>" (Trevor, Anthony J. et. al.,2002:379).</p> |
| <p><b>TT:</b> "Vankomisinin toksik etkileri üşüme, ateş, flebit, ototoksosite ve nefrotoksitedir. Hızlı intravenöz infüzyonu diffüz <u>ateş basmasına (flushing= red man syndrome)</u> neden olabilir" (Akkan, 2002:379).</p>               |

The term "*diffuse flushing*" ("*red man syndrome*") has been translated as "*ateş basması*" (*flushing= red man sendromu*). In this translation, both medical terms flushing= red man sendromu and its definitinon are used in order to make the TT coherent for the target receivers.

As shown in the examples which have been taken from *Katzung and Trevor's Pharmacology Examination and Board Review* and its Turkish translation, the

translation delivers information to the target reader with the same impact as on the source reader. In this way, the coherence rule stipulates that the TT must be sufficiently coherent to make it clear to the reader. Therefore, it can also be said that TT, in other words, *translatum* is the product of the source culture. As it is indicated by Reiss and Vermeer that the process of translation is considered as cultural transfer (1984:13). In this cultural transfer, the translator plays an important role to make the TT coherent for receivers.

### 3.4. Fidelity Rule

According to the hierarchical order of skopos theory, the coherence rule is related to internal textual coherence, and the fidelity rule is related to intertextual coherence with the ST (1978:101). As indicated by Vermeer, the fidelity rule, which is another important rule of skopos theory, emphasizes there must be intertextual coherence between TT and ST. Since the beginning of the studies which were done in the field of translation, fidelity has been viewed as one of the important determinants of equivalent translation. It follows that the existence or absence of a given informational element from the ST in the TT can be perceived as either positive or negative, depending on the assessor's views on fidelity and on his/her interpretation of the reason for this presence or absence. It also refers to a logical, precise, and cross-cultural equivalent shift from SL to translated text. In short, the fidelity rule merely states that there must be coherence between the translated version and the ST rule and it should be directly related to the information content of the ST. In the relationship among the rules, fidelity rule is considered subordinate to coherence, and both are subordinate to the skopos rule.

The examples which have been taken from *Katzung and Trevor's Pharmacology Examination and Board Review* and its Turkish translation will be examined in terms of fidelity rule. Since it is a technical text, most parts of the text are in compliance with fidelity rule. In this part of the thesis, examples taken from different parts of the texts have been analyzed. The examples which will

be given below include figures, tables, eponyms, questions and answers, and case histories.

### 3.4.1. Figures

First of all, figures taken from *Katzung and Trevor's Pharmacology Examination and Board Review* are going to be analyzed in the view of fidelity rule.

Figures are used in the textbook to depict the functions of the body systems and medical preperats. They comprise medical, pharmacological terminology, and abbreviations and formulas. In the examples below, the figures remain the same style and the same content in the TT that the ST has.

#### Example 1:

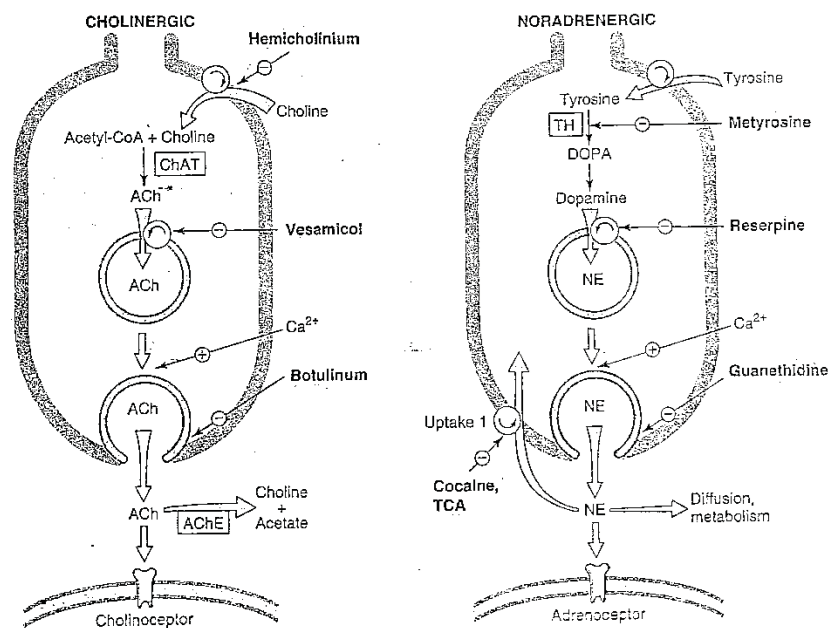


Fig.6. "Characteristics of transmitter synthesis, storage, release, and termination of action cholinergic at adrenergic nerve terminals" (Trevor, Anthony J. et. al., 2002:46).

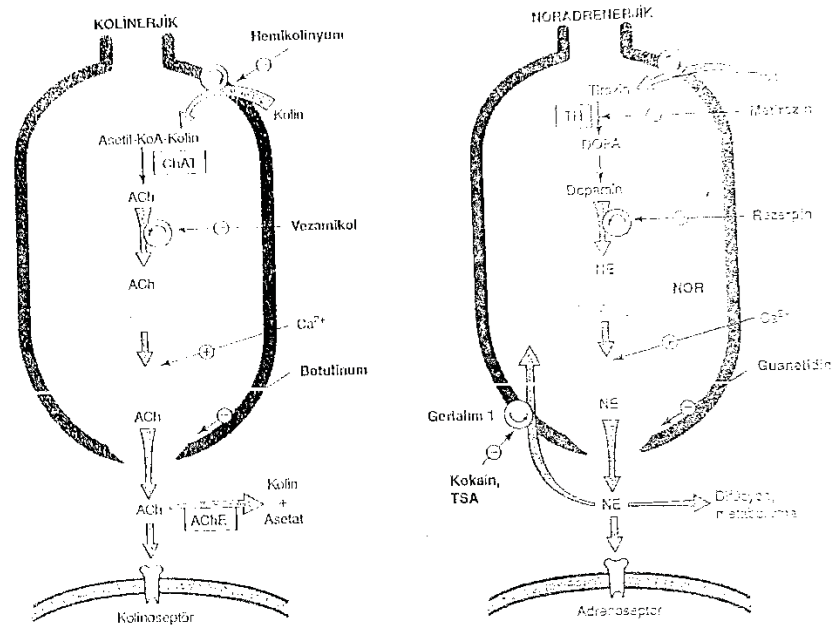


Fig.7. Turkish translation of "Characteristics of transmitter synthesis, storage, release, and termination of action cholinergic at adrenergic nerve terminals" (Özyazgan and Afşar, 2002:46)

In the figures shown above, it is seen that the illustration of transmission, symbols that have been used such as arrows, plus and minus, and abbreviations such as *ChAT*, *CoA*, *ACh*, *AChE*, *DOPA*, *TCA*, and  $Ca^{2+}$  in the TT are the same as the ST. Moreover, the terms have been translated in the pharmacological context word-for-word without giving any explanation. These terms and their translation are listed in the table below.

| <b>Example 1: Lexical Items</b> |                  |
|---------------------------------|------------------|
| <b>ST</b>                       | <b>TT</b>        |
| Colinergic                      | Kolinerjik       |
| Hemicholinium                   | Hemikolinyum     |
| Cholin                          | Kolin            |
| Astyl-Coa + Kolin               | Asetil-KoA-Kolin |
| Vesamicol                       | Vezamikol        |
| Botulinum                       | Botulinum        |
| Acetate                         | Asetat           |
| Cholinoceptor                   | Kolinoseptör     |
| Noradrenergic                   | Noradrenerjik    |
| Tyrosine                        | Tirozin          |
| Metyrosine                      | Metirozin        |
| Dopamine                        | Dopamin          |
| Reserpine                       | Rezerpin         |
| Guanethidine                    | Guanetidin       |
| Uptake                          | Gerialım         |
| Cocaine                         | Kokain           |
| Diffusion                       | Difüzyon         |
| Metabolism                      | Metabolizma      |
| Adrenoceptor                    | Adrenoseptör     |

As shown in the chart, all the terms in the ST have been borrowed from the TL. It can also be indicated that both the form of the figure and the terms that are used to show the flow of the chemical transporters are translated in compliance with the ST.

## Example 2:

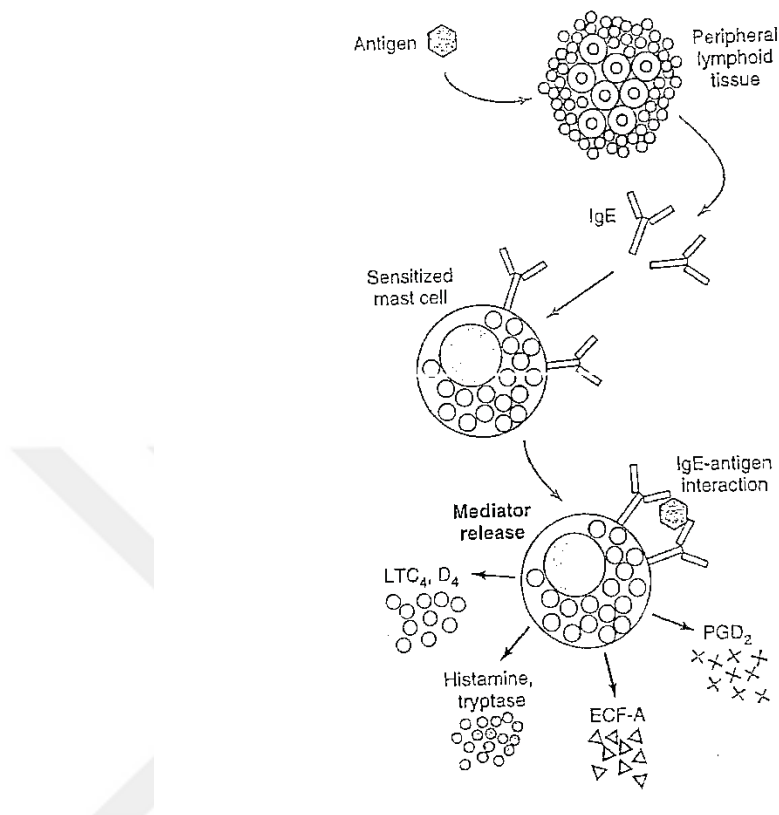


Fig.8. "Immunologic model for the pathogenesis of asthma" (Trevor, Anthony J. et. al., 2002:185)

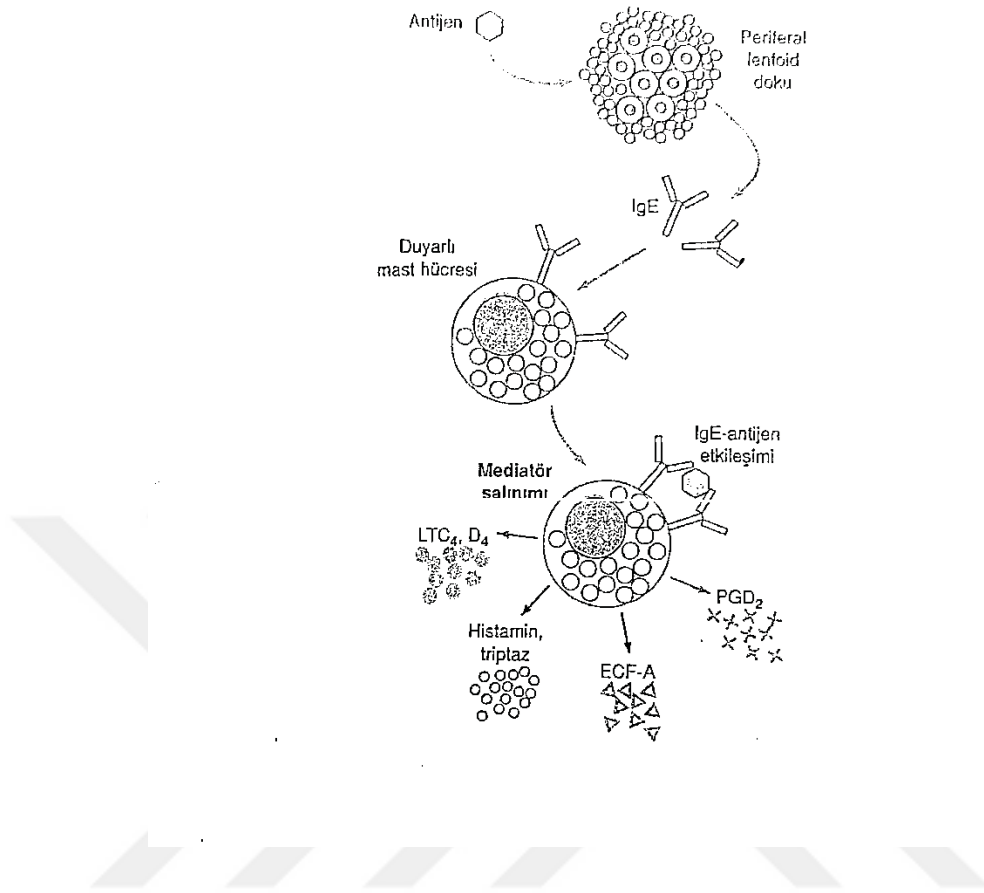


Fig.9. Translation of "Immunologic model for the pathogenesis of asthma" (Kutluata and Kutluata, 2002:185).

Similar to the first example, it can also be noticed in the second example that the same figure is used in the TT; in other words, the same structure and style have been created in the TT. In addition, lexical items are translated faithfully as indicated below:

| Example 2: Lexical Items   |                        |
|----------------------------|------------------------|
| ST                         | TT                     |
| antigen                    | antijen                |
| peripheral lymphoid tissue | periferel lenfoid doku |
| sensitized mast cell       | duyarlı mast hücresi   |
| ige-antigen interaction    | ige-antijen etkileşimi |
| mediator release           | mediatör salınımı      |
| histamine                  | histamin               |
| tryptase                   | triptaz                |

Obviously, the structure of the figure and the lexical items are replaced with their equivalences in Turkish in TT. Therefore, it can be said that the figures are translated keeping their style and the content of the original totally. As a result, the message is fully conveyed and the illustrations and explanations are clear in meaning, which is also complying with fidelity rule.

### Example 3:

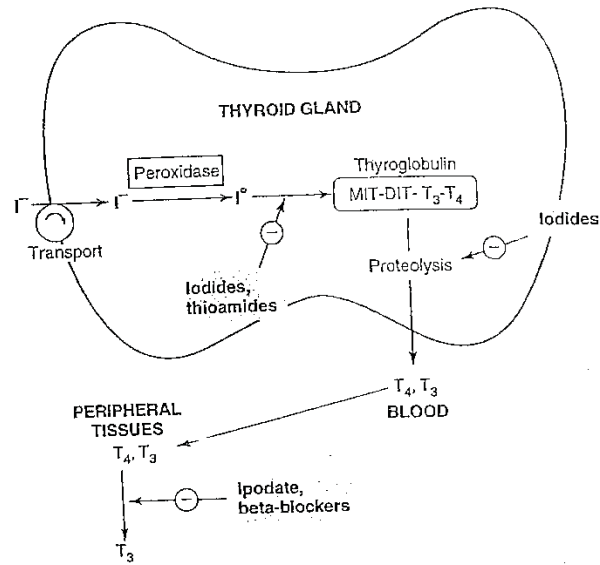


Fig.10. "Throid Gland" (Trevor, Anthony J. et. al., 2002:339)

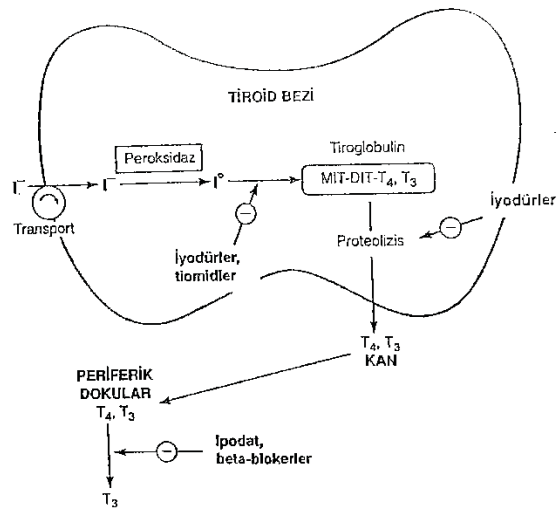


Fig. 11. Turkish Translation of "Throid Gland" (Akkan, 2002:339)

As it is obvious in this example that shows the figures of throid gland, both the form and the terms are translated in compliance with the ST. The following terms might set example to this inference:

| <b>Example 3: Lexical Items</b> |                   |
|---------------------------------|-------------------|
| <b>ST</b>                       | <b>TT</b>         |
| Thyroid gland                   | Tiroid Bezi       |
| Peroxidase                      | Peroksidaz        |
| Thyroglobulin                   | Tiroglobulin      |
| Proteolysis                     | Proteolizis       |
| Iodides                         | İyodürler         |
| Thiomides                       | Tiomidler         |
| Transport                       | Transport         |
| Peripheral Tissues              | Periferik Dokular |
| Blood                           | Kan               |
| Ipodate                         | Ipodat            |
| Beta-bolcker                    | Beta-blokerler    |

Therefore, it can be indicated that the terms in the figures are translated literally as it is indicated in the table above. Similarly, this example confirms that terms are translated in compliance with the ST.

Another example which shows *Katzung and Trevor's Pharmacology Examination and Board Review* was translated in accordance with fidelity rule is analyzed below:

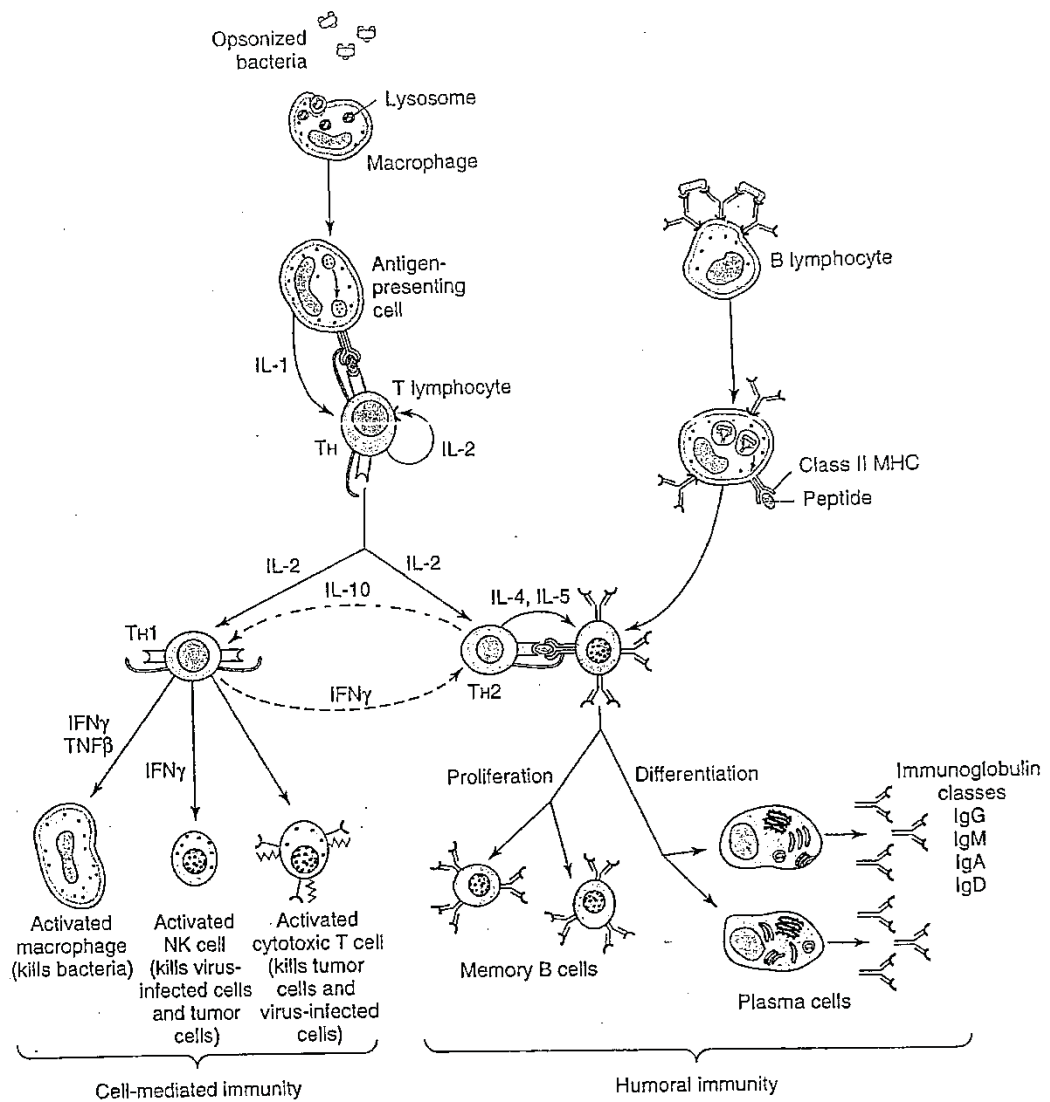
**Example 4:**

Fig.12. "Cell-mediated and humoral immune responses" (Trevor, Anthony J. et. al., 2002:493).

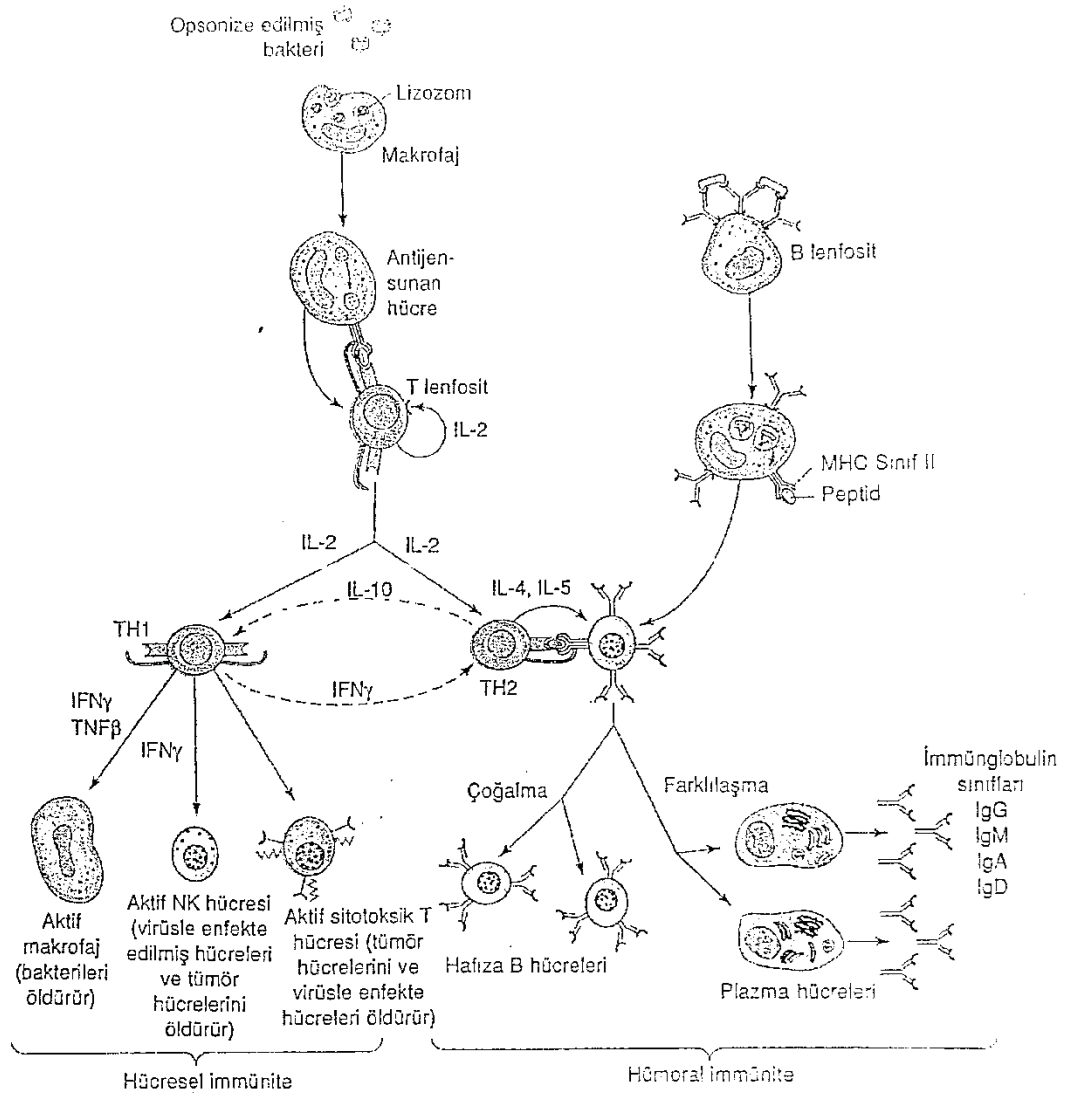


Fig. 13. Turkish Translation of "Cell-mediated and humoral immune responses" (Akkan, 2002:493).

Similar to the previous examples, the lexical items in the TT are equivalent with the ones in the ST as it is shown in the fourth example below. As it is clear, the style of the illustration of the cells remained the same in the ST. Similarly, the terms have been translated word-for-word as shown below:

| <b>Example 4: Lexical Items</b> |                                  |
|---------------------------------|----------------------------------|
| <b>ST</b>                       | <b>TT</b>                        |
| Opsonized bacteria              | Opsonize edilmiş bakteri         |
| Lysosome                        | Lizozom                          |
| Macrophage                      | Makrofaj                         |
| Antigen-presenting cell         | Antijen-sunan hücre              |
| T lymphocyte / B lymphocyte     | T lenfosit / B lenfosit          |
| Class II MHC                    | MHC Sınıf II                     |
| Peptide                         | Peptid                           |
| Poliferation                    | Çoğalma                          |
| Differentiation                 | Farklılaşma                      |
| Activated macrofage             | Aktif makrofaj                   |
| Activated NK cell               | Aktif NK hücresi                 |
| Virus-infected cells            | Virüsle enfekte edilmiş hücreler |
| Tumor cells                     | Tümör hücreleri                  |
| Activated cytotoxic T cell      | Aktif sitotoksik T hücresi       |
| Memory B cells                  | Hafıza B hücreleri               |
| Plasma cells                    | Plazma hücreleri                 |
| Immunoglobulin classes          | İmmünglobin sınıfları            |
| Cell-mediated immunity          | Hücreyel immünite                |
| Humoral immunity                | Hüморal immünite                 |

Consequently, the analyses of the figures suggest that the figures in the TT have the same function as the figures in the ST. The same figures, structures, and terms as in the original are used in the TT. In other words, the figures in the TT mirror and immitiate the ST. Therefore, it is likely that the ST will produce the same impact in the target culture as TT has on its readers.

### 3.4.2. Tables

The claim that the fidelity of translation has been maintained in the TT can also be supported by the translation of tables. Below is the first table and its analysis that might be suggested as an example of this:

#### Example 1:

Table 2

#### Definitions of Pharmacodynamics

| Term                       | Definition                                                                                                                                                                                                          |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Receptor                   | Component of the biologic system to which a drug binds to bring about a change in function of the system                                                                                                            |
| Inert binding site         | Component of the biologic system to which a drug binds without changing any function                                                                                                                                |
| Receptor site              | Specific region of the receptor molecule at which the drug binds                                                                                                                                                    |
| Agonist                    | A drug that activates its receptor upon binding                                                                                                                                                                     |
| Effector                   | Component of the biologic system that accomplishes the biologic effect after being activated by the receptor, often a channel or enzyme                                                                             |
| Pharmacologic antagonist   | A drug that binds to its receptor without activating it                                                                                                                                                             |
| Competitive antagonist     | A pharmacologic antagonist that can be overcome by increasing the dose of agonist                                                                                                                                   |
| Irreversible antagonist    | A pharmacologic antagonist that cannot be overcome by increasing the dose of agonist                                                                                                                                |
| Physiologic antagonist     | A drug that counters the effects of another by binding to a different receptor and causing opposing effects                                                                                                         |
| Chemical antagonist        | A drug that counters the effects of another by binding the drug and preventing its action                                                                                                                           |
| Partial agonist            | A drug that binds to its receptor but produces a smaller effect at full dosage than a full agonist                                                                                                                  |
| Graded dose-response curve | A graph of the increasing responses to increasing doses of a drug                                                                                                                                                   |
| Quantal dose-response      | A graph of the fraction of a population that shows a specified response to increasing doses of a drug                                                                                                               |
| EC <sub>50</sub>           | In graded dose-response curves, the concentration or dose that produces 50% of the maximum possible response; in quantal dose-response curves, the dose that causes the specified response in 50% of the population |
| K <sub>d</sub>             | The concentration of drug that results in binding to 50% of the receptors                                                                                                                                           |
| Efficacy                   | The maximum effect a drug can bring about, regardless of                                                                                                                                                            |

|                 |                                                                                                               |
|-----------------|---------------------------------------------------------------------------------------------------------------|
|                 | dose                                                                                                          |
| Potency         | The dose or concentration required to bring about 50% of a drug's maximal effect                              |
| Spare receptors | Receptors that do not have to bind drug in order for the maximum effect to be produced; K greater than the EC |

(Trevor, Anthony J. et. al.,2002:11)

Table 3

Turkish Translation of Definitions of Pharmacodynamics

| Terim                     | Tanımlama                                                                                                                                                                      |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Reseptör                  | Bir ilacın bağlanmasıyla biyolojik sistem fonksiyonunda değişikliğe neden olan biyolojik sistem bileşeni                                                                       |
| İnert bağlanma bölgeleri  | Bir ilacın bağlanmasıyla fonksiyonunda herhangi bir değişiklik olmayan biyolojik sistem bileşeni                                                                               |
| Reseptör bölgesi          | Reseptör molekülünde ilacın bağlandığı spesifik kısım                                                                                                                          |
| Agonist                   | Bağlandığı reseptörü aktive eden ilaç                                                                                                                                          |
| Efektör                   | Reseptör ile aktive edildikten sonra sıklıkla bir kanal veya enzim aracılığıyla biyolojik etkiyi gerçekleştiren biyolojik sistem bileşeni                                      |
| Farmakolojik antagonist   | Reseptörü aktive etmeden bağlanan ilaç                                                                                                                                         |
| Kompetitif antagonistler  | Agonistin dozu artırılarak üstesinden gelinebilen bir farmakolojik antagonist                                                                                                  |
| İrreversibl antagonist    | Agonistin dozu artırılarak üstesinden gelinemeyen bir farmakolojik antagonist                                                                                                  |
| Fizyolojik antagonist     | Farklı bir reseptöre bağlanarak diğer bir ilacın etkilerine zıt yönde etki oluşturan ilaç                                                                                      |
| Kimyasal antagonist       | Bir ilaca bağlanıp etkisini önleyerek zıt etki oluşturan ilaç                                                                                                                  |
| Parsiyel agonist          | Reseptöre bağlanıp yüksek konsantrasyonda tam agonistten daha az etki oluşturan ilaç                                                                                           |
| Kademeli doz-yanıt eğrisi | Bir ilacın artan dozlarına artan yanıtları gösteren bir grafik                                                                                                                 |
| Kuantal doz-yanıt eğrisi  | Toplumdaki bir kısmında bir ilacın artan dozlarda spesifik bir yanıtı gösteren bir grafik                                                                                      |
| EC <sub>50</sub>          | Kademeli doz yanıt eğrisinde, olası maksimum yanıtın %50'sini oluşturan doz veya konsantrasyon; kuantal doz-yanıt eğrisinde, toplumun %50'sinde spesifik yanıtı neden olan doz |
| K <sub>d</sub>            | Reseptörlerin %50'sinin bağlandığı ilaç konsantrasyonu                                                                                                                         |
| Efikasite                 | Doza bakılmaksızın bir ilacın meydana getirdiği maksimum etki                                                                                                                  |
| Potens                    | Bir ilacın maksimum etkisinin %50'sinin oluşturulması için gerekli doz veya konsantrasyon                                                                                      |
| Yedek reseptör            | Maksimum etkinin oluşturulması ilacın gerekli olmadığı                                                                                                                         |

|  |                                                                          |
|--|--------------------------------------------------------------------------|
|  | reseptörler; yani $K_d$ 'nin $EC_{50}$ 'den daha büyük olduğu durumlarda |
|--|--------------------------------------------------------------------------|

(Özyazgan, 2002:11)

As it is understood from the tables above, terms and explanations are literally translated and they are comprehensible and acceptable in the TL. Since the purpose of specialized translation is to transfer information, faithfulness has the utmost importance. As shown in the tables, the precise meaning is conveyed, complying with the fidelity rule. Additionally, as medical and pharmacological terms are bridges that link one language to another, it is important to transfer them precisely in order to prevent misunderstandings. In order to preserve this essence, the terms "*receptor*" which means "*kabul edici, alıcı*" in Turkish is translated as "*reseptör*", "*effector*" which means "*dengeleyici, etkileyici*" is translated as "*efektör*", "*competitive*" which means "*rekabetçi*" is translated as "*kompetitif*", "*irreversible*" which means "*geri dönüştürülemez*" is translated as "*irreversibl*", "*partial*" which means "*kısmı*" in Turkish is translated as "*parsiyel*", "*efficacy*" which means "*yarar, fayda*" is translated as "*efikasite*", and "*potency*" which means "*etki, yetki, güç*" is translated as "*potens*". By applying foreignization method, the TT is rendered to be useful for medical and pharmacological studies. In this way, standardization in pharmacological language and fidelity to the skopos of translation has been maintained.

Another example which shows the tables have been translated by keeping the structure of the original and most of the medical and pharmacological terms in TT have been borrowed from the SL is shown below:

**Example 2:**

Table 4

## Definitions of Drug Evaluation

| <b>Term</b>                            | <b>Definition</b>                                                                                                                                                                           |
|----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Single-blind study                     | "A clinical trial in which the investigators-but not the subjects-know which subjects are receiving active drug and which are receiving placebos"                                           |
| Double-blind study                     | "A clinical trial in which neither the subjects nor the investigators know which subjects are receiving placebos; the code is held by a third party"                                        |
| IND                                    | "Investigational New Drug Exemption; application for FDA approval to carry out new drug trials in humans; requires animal data"                                                             |
| NDA                                    | "New Drug Application; FDA approval to market a new drug for ordinary medical clinical use"                                                                                                 |
| Placebo                                | "An inactive "dummy" medication made up to resemble the active investigational Placebo formulation as much possible"                                                                        |
| Phases I, II, III of a clinical trials | "Three parts clinical trials that are usually carried out before submitting an NDA to the FDA"                                                                                              |
| Positive control                       | "A known standard therapy, to be used along with placebo, to fully evaluate the safety and efficacy of a new drug in relation the others available"                                         |
| Mutagenic                              | "An effect on the inheritable characteristics of a cell or organism-a mutation in the DNA: tested in microorganisms with the Ames test"                                                     |
| Teratogenic                            | "An effect on the development of an organism resulting in abnormal structure or function; not generally heritable"                                                                          |
| Carcinogenic                           | "An effect of inducing malignant characteristics"                                                                                                                                           |
| Orphan drugs                           | "Drugs developed for diseases in which the expected number of patients is small. Some drugs for countries bestow certain commercial advantages on companies that develop uncommon diseases" |

(Trevor, Anthony J. et. al.,2002:38)

Table 5

## Turkish Translation of Drug Evaluation Definitions

| Terim                         | Tanımlama                                                                                                                                                                          |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tek kör çalışma               | Bir deney grubunda sadece araştırmacıların-deneklerin bilmediği hangi deneklerin aktif ilacı hangilerinin plaseboyu aldığını bilmesidir                                            |
| Çift kör çalışma              | Çalışmada hem araştırmacıların hem de deneklerin hangi deneklerin plasebo aldığını bilmemesidir; şifreler 3. bir grupta saklanır                                                   |
| IND                           | Yeni ilaç Araştırması izin belgesi; insanlarda yeni ilaç araştırması yapabilmek için hayvan deneyi sonuçlarını içeren FDA başvuru belgesi                                          |
| NDA                           | Yeni ilaç uygulaması; yeni bir ilacın olağan tıbbi klinik kullanımı amacıyla satılabilmesi için gerekli FDA onayı                                                                  |
| Plasebo                       | Araştırılan ilaç formülasyonuna mümkün olduğu kadar benzer yapılmış inaktif "taklit" ilaç                                                                                          |
| Faz 1, 2, 3 klinik çalışmalar | Genelde NDA için FDA başvurusu öncesinde yapılan üç aşamalı klinik çalışmalar Yeni bir ilacın güvenilirlik ve efikasitesini mevcut diğer ilaçlarla ilişkili olarak bütünüyle       |
| Pozitif kontrol               | değerlendirmek amacıyla plasebo ile birlikte uygulanan standart bir tedavidir Bir hücre ya da organizmanın kalıtsal özellikleri üzerine olan bir etki                              |
| Mutajenik                     | DNA mutasyonu gibi- anlamına gelir ve mikroorganizmalarda Ames testi ile test edilir. Bir organizmanın gelişimi üzerinde, anormal yapı ve fonksiyon ile sonuçlanan ve genelde      |
| Teratojenik                   | kalıtsal olmayan etki malign özellikleri uyaran bir etki                                                                                                                           |
| Karsinojenik                  |                                                                                                                                                                                    |
| Öksüz ilaçlar                 | Beklenen hasta sayısı az olan hastalar için geliştirilen ilaçlardır. Bazı ülkeler nadir görülen hastalıklar için ilaç geliştiren ilaç firmalarına ticari avantajlar sağlamaktadır. |

(Özyazgan, 2002:38)

In Table 5., the key terms "*single blind study*", "*double blind study*", "*placebo*", "*clinic trials*", "*mutajenik*", "*teratojenik*", "*karsinojenik*", "*öksüz ilaçlar*" have been translated word-for-word. The translation of these words are respectively: "*tek kör çalışma*", "*çift kör çalışma*", "*plasebo*", "*klinik çalışmalar*", "*mutajeni*", "*teratojenik*", "*karsinojenik*", "*öksüz ilaçlar*". Similarly, some specific expressions and their translation is as follows: "*a clinical trial*" has been translated as "*tıbbi klinik kullanımı*", 'the safety and efficacy of a new drug' as "bir ilacın güvenilirlik ve efikasitesi", "*an inactive dummy medication*", "*inaktif taklit ilaç*", "*the Ames test*" as "*Ames testi*", and "*malignant characteristics*" as "*malign özellikler*". These

terms have also been translated by keeping the features of technical language and in compliance with intertextual coherence.

In addition to this, the abbreviations of the words in the table are transferred to the TT the same. These abbreviations are IND which stands for "*investigational new drug*" in the ST and "*yeni ilaç araştırması*" in the TT, NDA which stands for "*new drug application*" in the ST and "*yeni ilaç uygulaması*" in the TT, FDA which stands for *Food and Drug Administration* and DNA which stands for *deoxyribonucleic acid*.

The analysis of the terms and the abbreviations show that the translation combines loyalty with functionalism. Below is another example that also shows the textbook has been translated function-oriented similar to other examples.

### Example 3:

Table 6

Definitions of Cholinoceptor Blockers and Cholinesterase Regenerators

| Term                       | Definition                                                                                                                                                                                                                                                   |
|----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Anticholinergic            | "A drug that blocks muscarinic or nicotinic receptors"                                                                                                                                                                                                       |
| Atropine fever             | "Hyperthermia induced by antimuscarinic drugs; caused mainly by inhibition of sweating"                                                                                                                                                                      |
| Atropine flush             | "Marked cutaneous vasodilation of the arms and upper torso and head by antimuscarinic drugs; mechanism unknown"                                                                                                                                              |
| Cholinesterase regenerator | "A chemical antagonist that binds the phosphorus of organophosphates and displaces acetylcholinesterase"                                                                                                                                                     |
| Cycloplegia                | "Paralysis of accommodation"                                                                                                                                                                                                                                 |
| Depolarizing blockade      | "Flaccid skeletal muscle paralysis caused by persistent depolarization of the neuromuscular end plate"                                                                                                                                                       |
| Miotic                     | "A drug that constricts the pupil"                                                                                                                                                                                                                           |
| Mydriatic                  | "A drug that dilates the pupil"                                                                                                                                                                                                                              |
| Nondepolarizing blockade   | "Flaccid skeletal muscle paralysis caused by blockade of the nicotinic end plate receptor"                                                                                                                                                                   |
| Organophosphate aging      | "A chemical change in the organophosphate molecule that occurs 15 minutes to several hours after binding of the organophosphate to cholinesterase; aging renders the mpatholytic A enzyme-inhibitor complex less susceptible to regeneration by pralidoxime" |
| Parasympatholytic          | "A drug that blocks the muscarinic receptors of autonomic effector tissues and reduces the effects of parasympathetic nerve stimulation "                                                                                                                    |

(Trevor, Anthony J. et. al., 2002:68)

Table 7

Turkish Translation of Definitions of Cholinoceptor Blockers and Cholinesterase Regenerators

| Terim                      | Tanımlama                                                                                                                                                                                                                                 |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antikolinerjik             | Muskarinik veya nikotinik reseptörleri bloke eden bir ilaç                                                                                                                                                                                |
| Atropin ateşi              | Antimuskarinik ilaçlarla indüklenen, başlıca terlemenin inhibisyonu ile ortaya çıkan hipertermi                                                                                                                                           |
| Atropin flush'i            | Antimuskarinik ilaçlarla oluşan, mekanizması bilinmeyen, üst ekstremitenin, başın ve üst belirgin cilt vazodilatasyonu                                                                                                                    |
| Depolarizan blokaj         | Nöromüsküler son plağın sürekli depolarizasyonu sonucu oluşan gevşek iskelet kasi paralizi                                                                                                                                                |
| Farmakokinetik selektivite | Bir ilacın reseptör selektivitesiyle değil de lokal uygulama veya özel dağılımıyla elde edilen etki selektivitesi                                                                                                                         |
| Kolinesteraz rejeneratörü  | Organofosfatların fosforlarına bağlanan ve onları asetilkolinesteraz enziminden uzaklaştıran bir kimyasal antagonist                                                                                                                      |
| Midriyatik                 | Pupiller dilatasyona neden olan ilaç                                                                                                                                                                                                      |
| Miyotik                    | Pupiller konstriksiyona neden olan ilaç                                                                                                                                                                                                   |
| Nondepolarizan blokaj      | Nikotinik son plak reseptörünün blokajı nedeniyle oluşan gevşek iskelet kasi paralizi                                                                                                                                                     |
| Organofosfat yaşlanması    | Organofosfat molekülünde, kolinesteraza bağlandıktan 15 dakikadan saatlerce sonrasına kadar görülebilen ve enzim-inhibitör kompleksinin, piralidoksim ile oluşan rejenerasyondan daha az etkilenmesine neden olan bir kimyasal değişiklik |
| Parasempatolitik           | Otonomik efektör daha az etkilenmesine neden ile oluşan uyarısının dokuların olan bir kimyasal değişiklik etkilerini muskarinik reseptörlerini bloke eden ve parasempatik sinir azaltan bir ilaç                                          |

(Özyazgan and Afşar, 2002:68)

The terms that have been listed in the chart below have been translated function-oriented. In this way, the TT ensures that translation maintains the intentions of the commission and it complies with the ST.

| ST                                | TT                                    |
|-----------------------------------|---------------------------------------|
| anticholinergic                   | antikolinerjik                        |
| muscarinic or nicotinic receptors | muskarinik veya nikotinik reseptörler |
| atropine fever                    | atropin ateşi                         |
| hyperthermia                      | hipertermi                            |
| inhibition of sweating            | terlemenin inhibisyonu                |
| atropine flush                    | atropin flush                         |
| cutaneous vasodilation            | cilt vazodilatasyonu                  |
| cholinesterase regenerator        | kolinesteraz rejeneratörü             |
| chemical antagonist               | kimyasal antagonist                   |
| phosphorus of organophosphates    | Organofosfatların fosforları          |
| depolarizing blockade             | depolarizan blokaj                    |
| flaccid skeletal muscle paralysis | gevşek iskelet kasi paralizi          |
| neuromuscular end plate           | nöromusküler son plak                 |
| miotic                            | miyotik                               |
| mydriatic                         | midriyatik                            |
| constricts / dilates the pupil    | pupiller dilatasyona / konstriksiyona |
| nondepolarizing blockade          | nondepolarizan blokaj                 |
| nicotinic end plate receptor      | nikotinik son plak                    |
| organophosphate aging             | organofosfat yaşlanması               |
| pralidoxime                       | piralidoksim                          |
| parasympatholytic                 | parasempatolitik                      |
| parasympathetic nerve stimulation | parasempatik sinir azaltan            |
| pharmacokinetic selectivity       | farmakokinetik selektivite            |

As a result, it can be concluded from the analysis of tables that they are the parts that comply with fidelity rule in the textbook and function-oriented translation of the terms avoids any kind of ambiguity that can mislead the target audience.

### 3.4.3. Eponyms

Thirdly, eponyms that are used in *Katzung and Trevor's Pharmacology Examination and Board Review* and its Turkish translation will be analyzed in the view of fidelity rule.

Eponyms are known as distinctive characteristic of medical and pharmacological texts. Erten states that eponyms are words which describe a disease, operation, symptom, organ or formation and are named after the person who has conducted studies on them (2016:61). Less commonly, the person who gives his/her name to a disease can be a patient who suffered from it such as Hartnup disease and Lou Gehrig's disease. Eponyms are a tradition that continued and will continue for a long time in the Western science and medicine. It is also regarded as an honor for the person that gives his/her name to the disease. In some cases, a person describes a condition in an article in a respected journal and the condition is named after that person. To talk about something, it must be referred with a name. When there weren't enough tools to investigate causes of diseases, the eponym was an appropriate way to give a name to a disease. Additionally, eponyms can be found in different languages such as English, French, Latin, Greek, and Turkish (Erten, 2016:61). In the following table, the list of eponyms that are used in *Katzung and Trevor's Pharmacology Examination and Board Review* is given:

| The eponyms used in Katzung and Trevor's Pharmacology Examination and Board Review |                                |
|------------------------------------------------------------------------------------|--------------------------------|
| ST                                                                                 | TT                             |
| Addison's disease                                                                  | Addison hastalığı              |
| Alzheimer's dementia                                                               | Alzheimer tipi demans          |
| Cushing's syndrome                                                                 | Cushing sendromu               |
| Ebstein's malformation                                                             | Ebstein's malformasyonu        |
| Gilles de la Tourette's syndrome                                                   | Gilles de la Tourette sendromu |
| Grave's disease                                                                    | Graves hastalığı               |
| Huntington's disease                                                               | Huntington hastalığı           |
| Kaposi's sarcoma                                                                   | Kaposi sarkomu                 |
| Paget's disease                                                                    | Paget hastalığı                |
| Parkinson's disease                                                                | Parkinson hastalığı            |

|                             |                             |
|-----------------------------|-----------------------------|
| Raynaud's phenomenon        | Raynaud fenomeni            |
| Reye's syndrome             | Reye sendromu               |
| Sjörger's syndrome          | Sjögren sendromu            |
| St. Anthony's fire          | St. Anthony's ateşi         |
| Stevens-Johnson syndrome    | Stevens-Johnson sendromu    |
| Tourette's syndrome         | Tourette sendromu           |
| Turner's syndrome           | Turner sendromu             |
| Wernicke Korsakoff syndrome | Wernicke Korsakoff sendromu |
| Wilms' tumor                | Wilms tümörü                |
| Wilson's disease            | Wilson hastalığı            |
| Zollinger Ellison syndrome  | Zollinger ellison sendromu  |

Eponyms are translated without changing the structure of the words and keeping proper names. No additional information is added to clarify the terms. In this way, international feature of medical terminology has been preserved. In addition, fidelity to ST has been maintained by translating eponyms literally and faithfully.

As well as these eponyms, "*the Henderson-Hasselbach relationship*", "*the loop of Henle*", "*Fick's law*", and "*the Ames test*" are the other concepts in *Katzung and Trevor's Pharmacology Examination and Board Review* that the proper names are given to. Translation of these expressions are "*Henderson-Hasselbach denklemi*", "*Henle bağı*", "*Fick's yasası*", and "*Ames testi*" successively. These examples comply with fidelity rule, as well.

#### 3.4.4. Case Histories

In addition to translation of the figures, the tables and the eponyms; the case stories in the textbook are translated without changing their meaning and preserving all the information. In the following examples, four case histories are analyzed in the view of fidelity rule.

**Example 1:**

**ST:** "A 55-year-old man was found unconscious by his wife in the greenhouse behind their home. During the past week, he had been complaining of abdominal discomfort and frequent stools. His medical history was restricted to mild hypertension controlled by salt restriction (about 5 years) and type 2 diabetes controlled by diet (about 10 years). He had no history of mental illness or of alcohol or tobacco use, and he was not taking any medication. His last trip outside the country had been to Mexico 5 years earlier. He and his wife operated a small flower shop, and he was an enthusiastic home gardener.

Upon arrival at the emergency room, the patient was unconscious, salivating profusely, and breathing shallowly. His skin was warm and moist. Blood pressure was 140/90 mm Hg, pulse 72/min and regular, respirations 30/min, and temperature normal. There was no evidence of trauma. Both pupils were constricted and did not respond to light. Auscultation of the chest revealed moderate wheezing and numerous rhonchi. The heart was normal. Examination of the abdomen revealed no abnormalities other than hyperactive bowel sounds. The extremities showed subcutaneous muscle fasciculations at the time of admission. These disappeared during the course of the examination, but muscle tone decreased and breathing became shallower during this time. The neurologic examination revealed coma with no response to painful stimuli, no localizing signs, and no abnormal reflexes" (Trevor, Anthony J. et. al.,2002:66).

**TT:** "55 yaşında bir adam karısı tarafından evlerinin arka bahçesinde bilinci kapalı bir şekilde bulunmuştur. Adamın geçen hafta boyunca abdominal rahatsızlık ve sık dışkılama şikayetlerinin olduğu bilinmektedir. Öz geçmişi tuz kullanımının kısıtlanmasıyla kontrol edilebilen (yaklaşık 5 yıldır) hafif düzeyde bir hipertansiyon ve diyetle kontrol edilebilen (yaklaşık 10 yıldır) tip 2 diyabetle kısıtlıdır. Hastanın akıl hastalığı, alkol ve sigara kullanma, ilaç alma hikayesi yoktur. 5 yıl önce Meksika'ya gidişinden beri ülke dışına çıkmamıştır. Karısıyla beraber bir çiçekçi dükkânı işleten adam ayrıca ev bahçeciliğine meraklı bir kişidir

Acile gelişinden beri hastanın bilinci kapalıdır, aşırı tükürük salgısı ve yüzeysel solunum gözlenmektedir. Derisi sıcak ve nemlidir. Kan basıncı 140/90 mm Hg, nabızı 72/dk ve düzenli, solunumu 30/dk ve vücut sıcaklığı normaldir. Travmaya dair herhangi bir ipucu görülmemektedir. Her iki gözbebeği küçülmüş ve ışığa tepkisizdir. Göğüs oskültasyonu sonucunda orta şiddette wheezing ve çok sayıda ronkus saptanmıştır. Kalp muayenesi normaldir. Batin muayenesinde hiperaktif barsak sesleri dışında bir anormalliğe rastlanmamıştır. Acile geldiği anda, ekstremitelerin subkutan kaslarında fasikülasyonlar gözlenmiştir. Bu belirti kontrol esnasında ortadan kalkmış, ama kas gücü azalmış ve solunum daha da yüzeyselleşmiştir. Nörolojik muayenesi ağırlı uyarana yanıt vermeyen, lokalize bulgusu olmayan ve anormal refleks göstermeyen bir koma durumunu göstermektedir" (Özyazgan and Afşar,2002:66).

In the first case history above, "*was found unconscious*" is translated literally as "*bilinci kapalı bir şekilde bulunmuştur*". Both the use of passive structure and literal meaning of lexical items are preserved in the target sentence. Another example is the translation of "*mild hypertension controlled by salt restriction (about 5 years)*" as "*tuz kullanımının kısıtlanmasıyla kontrol edilebilen (yaklaşık 5 yıldır) hafif düzeyde bir hipertansiyon*" which gives the same meaning as the source sentence has. Similarly, the use of passive voice in the expression "*controlled by*" hasn't been changed in the target sentence and has been translated as "*kontrol edilebilen*". Similar to the translation of the previous sentence, "*type 2 diabetes controlled by diet*" has been translated as "*diyetle kontrol edilebilen tip 2 diyabet*" which is also word-for-word translation of the source sentence. In this case history, some symptoms are indicated in the following sentence: '*... the patient was unconscious, salivating profusely and breathing shallowly.*' have been translated as '*bilinci kapalıdır, aşırı tükürük salgısı ve yüzeysel solunum gözlenmektedir.*' As it is seen, the symptoms are all translated word-for-word although the verb structure in the TT shows a difference. In the following sentences, the medical terms have also been translated directly such as "*blood pressure*", "*pulse*", "*respiration*", "*temperature*", "*trauma*", "*pupils*", "*auscultation of the chest*", "*moderate wheezing*", "*rhonchi*", "*abdomen*", "*hyperactive bowel sounds*", "*extremities*", '*subcutaneous muscle fasciculations*' and '*neurologic examination*'. The translation of these terms are respectively as follows: "*kan basıncı*", "*nabızı*", "*solunumu*", "*vücut sıcaklığı*", "*travma*", "*her iki gözbebeği*", "*göğüs oskültasyonu*", "*orta şiddette wheezing*", "*ronkus*", "*batın*", "*hiperaktif barsak sesleri*", "*ekstremiteler*", "*subkutan kaslarında fasikülasyonlar*", ve "*nörolojik muayene*". These examples show that medical terms are translated into the TT by keeping their structure and meaning.

The analysis of the second case that has been taken from *Katzung and Trevor's Pharmacology Examination and Board Review* is as follows:

**Example 2:**

**ST:** "A 15-year-old boy was brought to the emergency room by the police because he "had a flushed face and was acting crazy." He had been found nude, incoherent, and wandering about aimlessly.

Physical examination showed blood pressure 170/100 mm Hg and pulse 144/min. He was comatose. The skin was flushed, dry, and hot to the touch. The pupils were widely dilated and equal, with a minimal response to light. Rectal temperature was 39.8 °C.

At this time, physostigmine salicylate, 2 mg, was given intravenously under electrocardiographic, electroencephalographic, and temperature monitoring. Within 15 minutes, the rectal temperature had fallen to 38.8 °C, while blood pressure and pulse were 160/68 mm Hg and 112/min, respectively. The patient became more alert and responsive to verbal commands but remained agitated. When questioned about ingestion of a toxic agent, the patient said that he had eaten "loco seeds," small black seeds of a weed that grew freely in the area. Remote memory was intact, but recent memory was grossly impaired.

Six hours later, the rectal temperature was 37 °C, and other vital signs were stable. The patient was talking spontaneously in a rapid and garbled manner. Although completely oriented, he continued to speak of imaginary objects and voices.

The patient rapidly improved and was discharged on the eighth hospital day without neurologic deficit" (Trevor, Anthony J. et. al.,2002:75).

**TT:** "15 yaşındaki bir erkek çocuk "kızarmış yüz ve deli gibi davranma" nedeniyle polis tarafından acil servise getirilir. Hasta çıplak, anlamsız şeyler konuşurken ve amaçsızca gezerken bulunmuştur.

Fiziksel muayenede kan basıncı 170/100 mmHg ve kalp hızı 144/dk ölçülmüştür. Hasta komatözdür. Deri kızarmış, kuru ve dokunma ile sıcaktır. Pupiller belirgin şekilde genişlemiş ve eşit, ışık refleksi minimaldir. Rektal ateş 39.8°C ölçülmüştür.

Bu sırada fizostigmin salisilat; EKG, EEG ve ateş monitorizasyonunda 2 mg IV olarak verilir. 15 dakika içinde rektal ateş 38.8°C'e düşmüştür. Bu sırada kan basıncı 160/68 mmHg ve kalp hızı 112/dk ölçülmüştür. Hasta daha uyanık ve sözel emirlere cevap verir hale gelmiş fakat yine de ajite kalmıştır. Toksik bir ajan yeme hakkında sorular yöneltildiğinde hasta "loco tohumu" yediğini söylemiştir. Bunlar arazide kendiliğinden yetişen yabani bir otun küçük siyah tohumlarıdır. Uzak hafıza sağlam fakat yakın hafıza belirgin şekilde bozulmuştur.

6 saat sonra, rektal ateş 37°C ve diğer hayati bulgular stabildir. Hasta spontan bir şekilde hızlı ve saçma şekilde konuşmaktadır. Tamamen oryante olmasına rağmen hayali seslerle ve objelerle konuşmaya devam etti. Hasta hızla iyileşmiş sekizinci hastane gününde nörolojik defisit olmadan taburcu edilmiştir" (Özyazgan and Afşar, 2002:75).

In this case story, the medical terms which show us that the TT has been translated in the view of fidelity rule are "*physical examination*", "*blood pressure*", "*comatose*", "*agitated*", "*remote memory*", "*recent memory*", "*stable*", and "*nörologic deficit*". These terms have been translated in the TT as "*fiziksel muayene*", "*kan basıncı*", "*komatöz*", "*ajite*", "*uzak hafıza*", "*yakın hafıza*", "*stabil*" ve "*nörolojik defisit*".

Another example which shows that the ST has been translated faithfully is the following sentence: "*At this time, physostigmine salicylate, 2 mg, was given intravenously under electrocardiographic, electroencephalographic, and temperature monitoring.*" Firstly, in the TT, the name of chemical substance *fizostigmin salisilat* has been borrowed from SL in which the term is *physostigmine salicylate*. Secondly, abbreviations of the names which define the methods that have been used for diagnosis such as "*electrocardiographic and electroencephalographic*" are used in the TT while another method "*temperature monitoring*" was translated word-for-word as "*ateş monitorizasyonu*". Similarly, the word "*intravenous*" was abbreviated in the TT and translated as "*IV*".

The analysis of the third case is as follows:

**Example 3:**

**ST:** "A 10-year-old girl received erythromycin for a prolonged respiratory tract infection. She continued to have headaches and a stuffy nose; a facial x-ray suggested maxillary sinusitis, which could not be confirmed following sinus puncture. Erythromycin was stopped and she was given amoxicillin (250 mg three times a day) for 10 days.

On the last day of amoxicillin treatment, she developed diarrhea with some abdominal pain but no vomiting. Initially the stools were alternately watery and solid, but later they became mucoid with some blood. After 11 days of these symptoms, she was given loperamide for her diarrhea, and a stool culture was positive for *Clostridium difficile*.

She was hospitalized, and sigmoidoscopy revealed colitis with pseudomembranes, confirmed histologically. Stool culture was positive for *C difficile* and negative for salmonella, shigella, yersinia, and campylobacter. The girl was treated with oral vancomycin, 250 mg four times daily for 7 days and was discharged following rectoscopic examination that proved normal and a negative *C difficile* stool culture" (Trevor, Anthony J. et. al., 2002:392).

**TT:** "10 yaşında bir kız çocuğu uzun süren solunum yolları enfeksiyonu için eritromisin olmuştur. Çocukta başağrısı vardır ve burnu tıkalıdır: Kafa röntgeni, sinüs ponsiyonu ile onaylanamayan maksiller sinüzit varlığını göstermektedir. Eritromisin kesilmiş ve kıza 10 gün süreyle (günde üç kez 250 mg) amoksisilin verilmiştir.

Amoksisilin tedavisinin son gününde abdominal ağrıya diyare gelişmiş, ancak kusma görülmemiştir. Gaita başlangıçta yumuşak ve solid, fakat daha sonra kanlı mukoidtir Bu semptomlardan 11 gün sonra kaza diyare için loperamid verilmiş ve gaita kültürü *Clostridium difficile* pozitif çıkmıştır.

Çocuk hastaneye yatırılmış ve sigmoidoskopi, histolojik olarak da tanımlanan, psödomembranöz kolit'i ortaya koymuştur. Gaita kültürü *C difficile* için pozitif ve salmonella, shigella, yersinia ve campylobacter için negatiftir. Çocuk 7 gün süreyle günde dört kez 250 mg dozunda, oral vankomisin ile tedavi edilmiştir ve rektoskopik muayenenin normal ve gaitanın kültürünün *C difficile* için negatif çıkmasını takiben hastaneden taburcu olmuştur" (Akkan, 2002:392).

To begin with, the names of the medicine have been borrowed from the TL: The word "erythromycin" has been translated as "eritromisin", "amoxicillin" as "amoksisilin", "loperamide" as "loperamid", and "(oral) vancomycin" as "(oral) vankomisin".

In addition to this, the words that describe symptoms and illnesses and their translation are as follows: "respiratory tract infection" has been translated as

"solunum yolları infeksiyonu", "maxillary sinusitis" as "maksiller sinüzit", "sinus puncture" as "sinüs ponksiyonu", "diarrhea" as "diyare", and "colitis with pseudomembranes" as "psödomembranöz koliti".

Similarly, other latin terms such as "clostridium difficile" has been translated as *Clostridium difficile* "sigmoidoscopy" as "sigmoidoskopi", "salmonella" as "salmonella", "shigella" as "shigella", "yersinia" as "yersinia", "campylobacter" as "campylobacter", and "recto" as "rektoskopik".

Regarding these points, it can be indicated that the translation is in comply with fidelity rule.

#### Example 4:

**ST:** "A 20-year-old woman in good health planned to visit Kenya in a travel and study program. She was immunized against tetanus, typhoid, cholera, and yellow fever, received immune globulin intramuscular (IGIM), and in Kenya took chloroquine and Fansidar (pyrimethamine- sulfadoxine) for malaria prophylaxis. After 10 weeks, she was one of 15 students (of 18 in the original group) to become ill, with fever, abdominal pain, and nonbloody diarrhea. Five days later, she developed severe back pain and then rapidly lost ability to walk. Stool examination showed ova of *Schistosoma mansoni*, and she was diagnosed as having schistosomiasis with transverse myelitis.

She was treated with oxanniquine and transported to the USA, where evaluation showed flaccid paralysis and decreased sensation of touch and of temperature over the skin of the legs. Cerebro spinal fluid examination showed pleocytosis and protein elevation. Serologic tests for mycoplasma and viral pathogens were negative. A myelogram showed no masses amenable to surgical removal.

The patient was treated with praziquantel and large doses of dexamethasone. Motor function and sensation improved with treatment, and within a month she was ambulating with assistance in a rehabilitation center" (Trevor, Anthony J. et. al., 2002:474).

**TT:** "20 yaşında, sağlıklı bir kadın, bir seyahat ve çalışma programı dahilinde Kenya'ya gitmeyi planlar. Tetanos, tifo, kolera ve sarı hummaya karşı aşı olur, immün globülin intramüsküler (IGIM) alır ve Kenya'da malarya profilaksisi için klorokin ve Fansidar (primetamin+sülfadoksin) alır 10 hafta sonra, abdominal ağrı ve kansız diyare şikayetleriyle hastalanan 15 öğrenciden (asıl gruptaki 18 kişiden) biri de odur. Beş gün sonra, şiddetli bir ağrı baslar ve sonra hızlı bir şekilde yürüme kabiliyetini kaybeder. Düska *Schisto mansoni* ovumları görülmüş ve transvers miyelit ile birlikte sistozomiyaz

teşhisi koyulmuştur.

Oksamniquinle tedavi edilmiş ve ABD'ye gönderilmiştir. Orada yapılan değerlendirme sonucunda flaksid felç ve bacak derisinde sıcaklık ve temas hissi azalması görülmüştür. Serebrospinal suyu incelemesi, pleositos ve protein artışını göstermiştir. Mitoplazma ve viral patojenlere yönelik serolojik testler negatiftir. Miyelogram, cerrahi müdahale ile çıkarılmaya uygun bir kitle göstermemiştir. Hasta prazikuantel ve yüksek dozlarda deksametazonla tedavi edilmiştir. Tedaviyle motor fonksiyonu ve hissetme iyileşmiştir ve bir ay içinde rehabilitasyon merkezinde yardımla yirimeye başlamıştır" (Akkan, 2002:474).

The second sentence of this case story, *"She was immunized against tetanus, typhoid, cholera, and yellow fever, received immune globulin intramuscular (IGIM), and in Kenya took chloroquine and Fansidar (pyrimethamine-sulfadoxine) for malaria prophylaxis."* has been translated as *"Tetanos, tifo, kolera ve sarı hummaya karşı aşı olur, immün globülin intramüsküler (IGIM) alır ve Kenya'da malarya profilaksisi için klorokin ve Fansidar (primetamin+sülfadoksin) alır 10 hafta sonra, abdominal ağrı ve kansız diyare şikayetleriyle hastalanan 15 öğrenciden (asıl gruptaki 18 kişiden) biri de odur"*. In this translation, it is seen that 'was immunized' was transferred as *"aşı olur"*, which is the exact equivalence of the ST. The illnesses in the TT such as *"tetanus"*, *"typhoid"*, *"cholera"*, and *"yellow fever"* have been translated as *' Tetanos", "tifo", "kolera", and "sarı humma"*. It is clear that the first three terms have been borrowed from the TL, and the last term *"sarı humma"* was a neologism in the TL; in other words, it was translated by adopting the structure of the SL.

Translation of medications in this section shows that the TT is in compliance with fidelity rule. Translation of the terms is respectively as follows: *"chloroquine"* was translated as *klorokin*, *Fansidar (pyrimethamine- sulfadoxine)* as *Fansidar (primetamin+sülfadoksin)*, *"oxanniquine"* as *"oksamniquin"*, *"praziquantel"* as *"prazikuantel"*, and *"dexamethasone"* as *"deksametazon"* which shows that the name of these medications have been borrowed from TL.

Another point that suggests the TT is equivalent with the ST is the translation of the terms related to symptoms such as *"fever"*, *"abdominal pain"*, and

"nonbloody diarrhea". These terms have been translated as "ateş", "abdominal ağrı" and "kansız diyare" respectively. All these terms have been translated word-for-word. Besides, instead of domesticating the word 'abdominal' which means "karın, karın ile ilgili", the same word used in the TT, which indicates that the translation preserves the terms in the specific field of translation.

The following sentences and their translation taken from example 4 are another example that shows the translation of the terms related to symptoms and illnesses have also been either borrowed or translated word-for-word. "*Stool examination showed ova of Schistosoma mansoni, and she was diagnosed as having schistosomiasis with transverse myelitis*" has been translated as "*Duska Schisto mansoni ovumları görülmüş ve transvers miyelit ile birlikte sistozomiyaz teşhisi koyulmuştur*". Similarly, "*Cerebro spinal fluid examination showed pleocytosis and protein elevation*" has been translated as "*Serebrospinal suyu incelemesi, pleositos ve protein artışı göstermiştir*". In these two examples, "*ova of Schistosoma mansoni*" has been translated as "*Duska Schisto mansoni ovumları*", "*schistosomiasis*" as "*sistozomiyaz*", "*transverse myelitis*" as "*transvers miyelit*", "*cerebro spinal fluid examination*" as "*serebrospinal suyu incelemesi*", "*pleocytosis*" as "*pleositos*", and "*protein elevation*" as "*protein artışı*", which shows that all the terms have been borrowed to render a faithful translation.

To put in a nutshell, all these example above support the idea that the TT is in compliance with fidelity rule.

### 3.4.5. Questions and Answers

Moreover, question and answer sections in *Katzung and Trevor's Pharmacology Examination and Board Review* have also been translated faithfully.

#### Example 1:

**TT:**

"QUESTIONS / DIRECTIONS: Each of the numbered items or incomplete statements in this section is followed by answers or by completions of the statement. Select the ONE lettered answer or completion that is BEST in each case.

Items 1 - 2: Following surgery for prostatic carcinoma, a 63-year-old man is undergoing radiation treatment as an outpatient because the tumor has metastasized to bone. He has pain in his right hip that is exacerbated when he sits down and backache when he moves about. The pain has been managed with a fixed combination of oxycodone plus acetaminophen taken orally. Despite increasing doses of the analgesic combination, the pain is getting worse.

1. If you decide to continue oral medication for the increasing pain, the best choice of drug for this patient would be

- (A) Butorphanol
- (B) Codeine plus aspirin
- (C) Levorphanol
- (D) Pentazocine
- (E) Propoxyphene

2. If the appropriate oral drug is prescribed, the patient will experience more pain relief (at least initially) and, possibly, some euphoria. However, he may have problems with nausea and sedation. Because of tolerance, it is possible that this patient will have to increase the dose of the analgesic as his condition progresses. Tolerance will not develop to a significant extent with respect to

- (A) Constipation
- (B) Euphoria
- (C) Nausea and vomiting
- (D) Sedation
- (E) Urinary retention

3. Which one of the following actions of opioid analgesics is mediated via activation of kappa receptors?

- (A) Cerebral vascular dilation
- (B) Decreased uterine tone
- (C) Euphoria
- (D) Sedation
- (E) Psychologic dependence

4. You are on your way to take an examination and you suddenly get an attack of diarrhea. If you stop at a nearby drugstore for an over-the-counter opioid with antidiarrheal action, you will be asking for

- (A) Codeine
- (B) Dextromethorphan
- (C) Diphenoxylate
- (D) Loperamide
- (E) Nalbuphine" (Trevor, Anthony J. et. al.,2002:285).

**ST:**

**"SORULAR / YÖNLENDİRMELER:**

Bu bölümdeki numaralandırılmış maddelerin veya tamamlanmamış durumların her birinin cevabı veya tamamlayıcıları altındadır. Her durumda EN İYİ TEK cevabi veya tamamlayıcıyı seçiniz.

1-2. Sorular: 63 yaşında erkek hasta prostat kanser ameliyatından sonra kemik metastazından dolayı radyoterapi almaya başlıyor. Oturduğunda artan kalça ağrısı ve hareket ettiğinde sırt ağrısı olduğunu ifade ediyor. Ağrıları oksikodon ve asetaminofenin oral verilmesiyle kontrol edilmeye çalışıyor. Analjezik kombinasyonun dozu artırılmasına rağmen ağrısı artıyor.

1. Eğer hastanıza ağrı arttığında oral ilaç tedavisine devam etme kararı alırsanız, en iyi seçim hangisi olur?

- (A) Butorfanol
- (B) Kodein ve aspirin
- (C) Levorfanol
- (D) Pentazosin
- (E) Propoksifen

2. Eğer uygun ilaç yazılırsa, hasta daha az ağrı duyacak (başlangıca göre) ve muhtemelen öforisi olacaktır. Bununla birlikte bulantı ve sedasyon gibi problemleri olacaktır. Tolerans gelişeceğinden hastanın ilerleyen hastalığı için analjezik dozunun artırılması gerekecektir. Aşağıdaki etkilerden hangisine diğerlerine nazaran tolerans gelişmez?

- (A) Konstipasyon
- (B) Öfori
- (C) Bulantı ve kusma
- (D) Sedasyon
- (E) Üriner retansiyon

3. Aşağıdakilerden hangisi opioid analjeziklerin kappa reseptör aracılığı ile olan etkisi değildir?

- (A) Serebral vasküler dilatasyon
- (B) Uterus tonusunun azalması
- (C) Öfori
- (D) Sedasyon
- (E) Psikolojik bağımlılık

4. Bir sınav öncesindesiniz ve aniden diyare oluyorsunuz. En yakın bir eczaneye gidip antidiyare etkili reçetesiz bir ilaç isterseniz, hangisini istersiniz?

- (A) Kodein
- (B) Dekstrometorfan
- (C) Difenoksilat
- (D) Loperamid
- (E) Nalbufin" (Özgön, 2002:285).

First of all, instruction is given at the beginning of the section literally without changing the meaning. Additionally, by writing the words "*EN İYİ TEK*" in capital letters, the style is kept similar to the original text in which the words "*ONE*" and "*BEST*" are written in capitals, too.

Following the directions, questions are introduced to students with a case history of a man who is 63 year-old man undergoing radiation treatment as an outpatient because the tumor has metastasized to bone following surgery for prostatic carcinoma. The translation of the sentence in TT is "*63 yaşında erkek hasta prostat kanser ameliyatından sonra kemik metastazından dolayı radyoterapi almaya başlıyor*" which is fully equivalent to ST. The second sentence of the case history is "*He has pain in his right hip that is exacerbated when he sits down and backache when he moves about*". The first part of the sentence, "*has pain in his right hip that is exacerbated when he sits down*" is translated as "*oturduğunda artan kalça ağrısı*" and the second part, backache when he moves about, is translated as "*hareket ettiğinde sırt ağrısı*" which fully complies with the original. Next, "*the pain has been managed*" in the third sentence is translated as "*ağrıları ... kontrol edilmeye çalışıyor*" and "*a fixed combination of oxycodone plus acetaminophen taken orally*" is transferred as "*oksikodon ve asetaminofenin oral verilmesiyle*" in the ST. Although a fixed combination of the drugs is not indicated directly in the ST and instead of the verb "*to take (drugs)*" which means "*(ilaç) almak*", "*(ilaç) vermek*" which means "*to give (drugs)*" is used. Nevertheless, the TT has the same message as the ST. Moreover, the last sentence in this section is also seen to be translated

literally. Therefore, all information in this section is fully conveyed in accordance with the fidelity rule.

Additionally, the expressions in questions and choices that comply with each other are shown in the chart below.

| Question 1                                                                                                          |                                                                                                               |
|---------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|
| ST                                                                                                                  | TT                                                                                                            |
| If you decide to continue oral medication for the increasing pain the best choice of drug for this patient would be | Eğer ... devam etme kararı alırsanız oral ilaç tedavisine ağrı arttığında en iyi seçim hastanıza hangisi olur |
| (A) Butorphanol                                                                                                     | (A) Butorfanol                                                                                                |
| (B) Codeine plus aspirin                                                                                            | (B) Kodein ve aspirin                                                                                         |
| (C) Levorphanol                                                                                                     | (C) Levorfanol                                                                                                |
| (D) Pentazocine                                                                                                     | (D) Pentazosin                                                                                                |
| (E) Propoxyphene                                                                                                    | (E) Propoksifen                                                                                               |

| Question 2                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ST                                                                                                                                                                                                                                                                                                                                                                                                   | TT                                                                                                                                                                                                                                                                                                                                                     |
| If the appropriate oral drug is prescribed the patient will experience more pain relief (at least initially) and, possibly, some euphoria However he may have problems with nausea and sedation Because of tolerance it is possible that this patient will have to increase the dose of the analgesic as his condition progresses Tolerance will not develop to a significant extent with respect to | Eğer uygun ilaç yazılırsa hasta duyacak daha az ağrı (başlangıca göre) ve muhtemelen öforisi olacaktır Bununla birlikte olacaktır. problemleri bulantı ve sedasyon gibi Tolerans gelişeceğinden gerekecektir Hastanın ... artırılması analjezik dozunun ilerleyen hastalığı için tolerans gelişmez Aşağıdaki etkilerden hangisinde diğerlerine nazaran |
| (A) Constipation                                                                                                                                                                                                                                                                                                                                                                                     | (A) Konstipasyon                                                                                                                                                                                                                                                                                                                                       |
| (B) Euphoria                                                                                                                                                                                                                                                                                                                                                                                         | (B) Öfori                                                                                                                                                                                                                                                                                                                                              |
| (C) Nausea and vomiting                                                                                                                                                                                                                                                                                                                                                                              | (C) Bulantı ve kusma                                                                                                                                                                                                                                                                                                                                   |

|                       |                       |
|-----------------------|-----------------------|
| (D) Sedation          | (D) Sedasyon          |
| (E) Urinary retention | (E) Üriner retansiyon |

| Question 3                                         |                                              |
|----------------------------------------------------|----------------------------------------------|
| ST                                                 | TT                                           |
| Which one of the following actions ... is mediated | Aşağıdakilerden hangisi ... etkisi değildir? |
| opioid analgesics                                  | opioid analjeziklerin                        |
| via activation of kappa receptors?                 | kappa reseptör aracılığı ile olan            |
| (A) Cerebral vascular dilation                     | (A) Serebral vasküler dilatasyon             |
| (B) Decreased uterine tone                         | (B) Uterus tonusunun azalması                |
| (C) Euphoria                                       | (C) Öfori                                    |
| (D) Sedation                                       | (D) Sedasyon                                 |
| (E) Psychologic dependence                         | (E) Psikolojik bağımlılık                    |

| Question 4                                                                                                         |                                                                                                    |
|--------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| ST                                                                                                                 | TT                                                                                                 |
| You are on your way to take an examination and you suddenly get an attack of diarrhea.                             | Bir sınav öncesindesiniz ve aniden diyare oluyorsunuz.                                             |
| If you stop at a nearby drugstore for an over-the-counter opioid with antidiarrheal action, you will be asking for | En yakın bir eczaneye gidip reçetesiz bir ilaç isterseniz, antidiyare etkili hangisini istersiniz? |
| (A) Codeine                                                                                                        | (A) Kodein                                                                                         |
| (B) Dextromethorphan                                                                                               | (B) Dekstrometorfan                                                                                |
| (C) Diphenoxylate                                                                                                  | (C) Difenoksilat                                                                                   |
| (D) Loperamide                                                                                                     | (D) Loperamid                                                                                      |
| (E ) Nalbuphine                                                                                                    | (E) Nalbufin                                                                                       |

Medical and pharmacological terms in questions are translated almost word-for-word as shown in the charts above. This is another distinct example of maintaining fidelity in TT.

The following excerpt includes the example of the answers of the questions which have been analyzed above:

**Example 2:****TT:**

"1. In most situations, pain associated with metastatic carcinoma will ultimately necessitate the use of an opioid analgesic that equivalent in strength to morphine, so levorphanol would be indicated. Pentazocine or the combination of codeine plus salicylate are unlikely to be as effective as the original drug combination. Propoxyphene is less active than codeine alone. Butorphanol is a strong agent but is only available for parenteral injection. The answer is (C).

2. Chronic use of strong opioid analgesics leads to the development of tolerance to their analgesic, euphoric, and sedative actions. Tolerance also develops their emetic effects and effects on some smooth muscle, including the urethral sphincter muscle. However, tolerance does not develop to the constipating or miotic actions of the opioid analgesics. The answer is (A).

3. Kappa receptor activation does not appear to be responsible for dependence, euphoria, or effects on smooth muscle. Increases in cerebral blood flow and (possibly) increased intracranial pressure result from the respiratory depressant actions of opioid analgesics. The latter effects are due to increased arterial PCO<sub>2</sub>, which results from mu receptor inhibition of the medullary respiratory center. However, the activation of kappa receptors contributes to analgesia at the spinal level and is probably responsible for sedative actions of the opioids. The answer is (D).

4. Codeine and possibly nalbuphine could decrease gastrointestinal peristalsis but not without marked side effects (and a prescription). Dextromethorphan is a cough suppressant. The other two drugs listed are opioids with antidiarrheal actions. Diphenoxylate is not available over-the-counter since it is a constituent of a proprietary combination that includes atropine sulfate (Lomotil). Loperamide is available over-the-counter. The answer is (D)" (Trevor, Anthony J. et. al.,2002:285).

**ST:**

"1. Metastatik kanser ağrısı çoğu zaman morfinin gücüne eş opioid analjezik kullanılmasını gerektirir, bunun için levorfanol uygun ilaç olabilir. Pentazosin veya kodein salisilat kombinasyonu orijinal ilaç kombinasyonları kadar etkili değildir. Propoksifen kullanılan kodeinden daha az etkilidir. Butorfanol güçlü bir ajandır ama yalnızca parenteral kullanılır. Cevap (C).

2. Güçlü opioid analjeziklerin kronik kullanımında analjezik, öforik ve sedatif etkilerine tolerans gelişir. Aynı zaman da emetik etkilerine ve üretral sfinkter kasi dahil olmak üzere bazı düz kaslara olan etkilerine de tolerans gelişir. Bununla birlikte konstipasyon yapıcı etkisine veya miyotik etkilerine tolerans gelişmez. Cevap (A).

3. Kappa reseptör aktivitesi bağımlılık, öfori veya düz kas etkilerinden sorumlu değildir. Serebral kan akımının artması ve (olası) intrakranyal basıncın artması opioid analjeziklerin solunum depressan etkileri sonucudur. Bu etkiler medüller respiratuar merkezdeki mu reseptörlerinin inhibisyonu ile sonuçlanan arteriyel PCO<sub>2</sub> artışından

dolayıdır. Bununla birlikte kappa reseptörlerinin aktivasyonu spinal seviyede analjeziye katkıda bulunur ve muhtemelen opioidlerin sedatif etkisinden sorumludur. Cevap (D).

4. Kodein ve muhtemelen nalbupin gastrointestinal peristaltizmi azaltırlar ama yan etkileri vardır ve reçetelenmeleri gerekir. Dekstrometorfan öksürük baskılayıcıdır. Listelenen diğer iki ilaç antidiyaretikdir. Difenoksilat reçetesiz satılmaz ve atropinle kombine bir preparatı vardır (lomotil). Loperamid reçetesiz olarak satılır. Cevap (D)" (Özgön, 2002:285).

It is apparent that pharmacological and medical terms are translated word-for-word by keeping the essence of technical translation. The terms which comply with their translation in the view of translation fidelity are listed below:

| Answer 1             |                   |
|----------------------|-------------------|
| ST                   | TT                |
| metastatic carcinoma | metastatik kanser |
| opioid analgesic     | opioid analjezik  |
| morphine             | morfin            |
| levorphanol          | levorfanol        |
| pentazocine          | pentazosin        |
| codeine              | kodein            |
| salicylate           | alisilat          |
| propoxyphene         | propoksifen       |
| butor                | butorfanol        |

| Answer 2                  |                             |
|---------------------------|-----------------------------|
| ST                        | TT                          |
| strong opioid analgesics  | güçlü opioid analjeziklerin |
| tolerance                 | tolerans                    |
| analgesic                 | analjezik                   |
| euphoric                  | öforik                      |
| sedative                  | sedatif                     |
| emetic effects            | emetik etkiler              |
| smooth muscle             | düz kaslar                  |
| urethral sphincter muscle | üretral sfinkter kası       |
| constipating              | konstipasyon                |
| miotic actions            | miyotik etkiler             |

| Answer 3                       |                                |
|--------------------------------|--------------------------------|
| ST                             | TT                             |
| kappa receptor                 | kappa reseptörü                |
| dependence                     | bağımlılık                     |
| euphoria                       | öfori                          |
| smooth muscle                  | düz kas                        |
| cerebral blood flow            | serebral kan akışı             |
| intracranial pressure          | intrakranyal basıncı           |
| respiratory depressant actions | solunum depressan etkiler      |
| opioid analgesics              | opioid analjezikler            |
| arterial PCO <sub>2</sub>      | arteryal PCO <sub>2</sub>      |
| mu receptor inhibition         | mu reseptörlerinin inhibisyonu |
| medullary respiratory          | medüller respiratuar           |
| kappa receptors                | kappa reseptörleri             |
| analgesia                      | analjezi                       |
| spinal                         | spinal                         |
| sedative                       | sedatif                        |

| Answer 4                     |                                |
|------------------------------|--------------------------------|
| ST                           | TT                             |
| codeine                      | kodein                         |
| nalbuphine                   | nalbufin                       |
| gastrointestinal peristalsis | gastrointestinal peristaltizmi |
| side effects                 | yan etkiler                    |
| prescription                 | reçetelenme                    |
| dextromethorphan             | dekstrometorfan                |
| cough suppressant            | öksürük baskılayıcı            |
| antidiarrheal actions        | antidiyaretik                  |
| diphenoxylate                | difenoksilat                   |
| over-the-counter             | reçetesiz                      |
| atropine                     | atropinle                      |
| loperamide                   | loperamid                      |

The terms and their translation which are listed in the tables above demonstrate that medical and pharmacological terms that have been used in the answers sections of the ST are translated almost word-for-word.

Some of these terms have been borrowed from SL. In this way, they have the same impact on the reader. These borrowed terms are "*metastatik kanser*", "*opioid*", "*analjezik*", "*tolerans*", "*öforik*", "*sedatif*", "*konstipasyon*", "*arteryal PCO*", "*kappa reseptörü*", "*mu reseptörlerinin inhibisyonu*", "*medüller respiratuar*", "*spinal*", "*sedatif gastrointestinal peristaltizmi*", and "*antidiyaretik*".

The names of medicines and chemicals have also been borrowed from the ST. These words are as follows: "*morfin*", "*levorfanol*", "*pentazosin*", "*kodein*", "*alisilat*", "*propoksifen*", "*butorfanol*", "*kodein*", "*nalbufin*", "*dekstrometorfan*", "*difenoksilat*", "*atropinle*", and "*loperamid*".

The other terms that have been used in the section are translated word-for-word. As shown in the tables, translation of these words are as follows: "*emetik etkiler*", "*düz kaslar*", "*üretal sfinkter kası*", "*miyotik etkiler*", "*bağımlılık*", "*serebral kan akışı*", "*intrakranyal basıncı*", "*solunum depressan etkileri*", "*yan etkiler*", "*reçetelenme*", "*öksürük baskılayıcı*", and "*reçetesiz*".

As it is seen, fidelity has been maintained in these sections, as well. Another example of maintaining fidelity in questions answers section is given below:

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Example 3:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <p><b>ST:</b></p> <p>"QUESTIONS in this section is followed by answers DIRECTIONS Each of the numbered items or incomplete statements completion that is BEST in completions of the statement. Select the ONE answer or each case. all of the following EXCEPT</p> <ol style="list-style-type: none"> <li>Properties of local anesthetics include             <ol style="list-style-type: none"> <li>Blockade of voltage-dependent sodium channels</li> <li>Preferential binding to resting channels</li> <li>Slowing of axonal impulse conduction</li> <li>An increase in membrane refractory period</li> <li>Effects on vascular tone</li> </ol> </li> <li>The pKa of lidocaine is 7.9. In infected tissue at pH 6.9, the fraction in the ionized form will be             <ol style="list-style-type: none"> <li>1%</li> <li>10%</li> <li>50%</li> <li>90%</li> <li>99%</li> </ol> </li> <li>Which of the following statements about nerve blockade with local anesthetics is most correct?             <ol style="list-style-type: none"> <li>Block is faster in onset in infected tissues</li> <li>Block is faster in onset in unmyelinated fibers</li> <li>Block is slower in onset in hypocalcemia</li> </ol> </li> </ol> |

- (D) Block is faster in onset in hyperkalemia  
 (E) Block is slower in onset in the periphery of a nerve bundle than in the center of a bundle

4. The most important effect of inadvertent IV administration of a large dose of an amide local anesthetic is  
 (A) Bronchoconstriction  
 (B) Hepatic damage  
 (C) Nerve damage  
 (D) Renal failure  
 (E) Seizures" (Trevor, Anthony J. et. al.,2002:241).

**TT:**

**"SORULAR**

**YONLENDİRMELER:**

Bu bölümdeki numaralandırılmış maddelerin veya tamamlanmamış durumların her birinin cevabı veya tamamlayıcıları altındadır. Her durumda EN İYİ TEK cevabi veya tamamlayıcıyı seçiniz.

1. Aşağıdakilerden hangisi lokal anestezi özelliği değildir?

- (A) Voltaj bağımlı sodyum kanal blokajı  
 (B) Tercihen istirahat halindeki kanallara bağlanma  
 (C) Aksonal uyarı iletimini yavaşlatma  
 (D) Membran refrakter periyodunda artış  
 (E) Vasküler tonus üzerine etki

2. Lidokainin pKa'sı 7.9'dur. pH'sı 6.9 olan infekte dokuda iyonize formun oranı % kaçtır?

- (A) %1  
 (B) %100  
 (C) %50  
 (D) %90  
 (E) %99

3. Lokal anestezi ile sinir blokajı ile ilgili aşağıdakilerden hangisi en doğrudur?

- (A) Blok başlaması enfekte dokuda en hızlıdır  
 (B) Blok başlaması miyelinsiz liflerde en hızlıdır  
 (C) Blok başlaması hipokalsemiye en yavaştır  
 (D) Blok başlaması hiperkalsemiye en hızlıdır  
 (E) Blok başlaması sinir gövdesinin periferinde merkeze oranla daha yavaştır

4. İstenmeden IV uygulanan yüksek doz amid lokal anesteziğin en önemli etkisi nedir?

- (A) Bronkokonstriksiyon  
 (B) Karaciğer hasarı  
 (C) Sinir hasarı  
 (D) Böbrek yetersizliği  
 (E) Konvülsiyon" (Özgön, 2002:241).

The terms in questions which have been translated word-for-word are listed in the tables below:

| Question 1                 |                              |
|----------------------------|------------------------------|
| ST                         | TT                           |
| local anesthetics          | lokal anestezi               |
| voltage-dependent          | voltaj bağımlı               |
| sodium channels            | sodyum kanal                 |
| resting channels           | istirahat halindeki kanallar |
| axonal impulse conduction  | aksonal uyarı iletimi        |
| membrane refractory period | membran refrakter periyodu   |
| vascular tone              | vasküler tonus               |

| Question 2       |                      |
|------------------|----------------------|
| ST               | TT                   |
| pka of lidocaine | lidokainin pka'sı    |
| infected tissue  | enfekte doku         |
| the ionized form | iyonize formun oranı |

| Question 3          |                   |
|---------------------|-------------------|
| ST                  | TT                |
| nerve blockade      | sinir blokajı     |
| local anesthetics   | lokal anestezi    |
| infected tissues    | enfekte doku      |
| unmyelinated fibers | miyelinsiz lifler |
| hypocalcemia        | hipokalsemi       |
| hyperkalemia        | hiperkalemi       |
| periphery           | periferi          |
| nerve bundle        | sinir gövdesi     |

| Question 4                    |                         |
|-------------------------------|-------------------------|
| ST                            | TT                      |
| inadvertent IV administration | istenmeden IV uygulanan |
| large dose                    | yüksek doz              |
| amide local anesthetic        | amid lokal anestezi     |
| bronchoconstriction           | bronkokonstriksiyon     |
| hepatic damage                | karaciğer hasarı        |
| nerve damage                  | sinir hasarı            |
| renal failure                 | böbrek yetersizliği     |
| seizures                      | konvülsiyon             |

The terms and their translation which are listed in the tables above demonstrate that function-oriented approach was adopted in this section, too. In this way fidelity was maintained in TT. The answers to these questions are as follows:

#### Example 4:

#### TT:

#### "ANSWERS

1. Local anesthetics bind preferentially to sodium channels in the open and inactivated states. Recovery from drug-induced block is 10-1000 times slower than recovery of channels from normal inactivation. Resting channels have a lower affinity for local anesthetics. The answer is (B).

2. Since the drug is a weak base, it will be more ionized (protonated) at pH values lower than its pK. Since the pH given is 1 log unit lower (more acid) than the pKa, the ratio of ionized to nonionized drug will be approximately 90:10. The answer is (D) (Recall from Chapter 1 that at a pH equal to pKa, the ratio is 1:1; at 1 log unit difference, the ratio is approximately 90:10; at 2 units difference, 99:1; etc.)

3. Smaller-diameter nerve fibers are more sensitive to local anesthetics and are blocked more rapidly than those of larger size. As the local concentration of drug declines during recovery from local anesthesia, smaller fibers continue to be blocked and are the last to recover. The answer is (D).

4. Of the effects listed, the most important in local anesthetic overdose (of both amide and ester types) concern the CNS. Such effects can include sedation or restlessness, nystagmus, convulsions, coma, and respiratory depression. Diazepam is used for seizures caused by local anesthetics, usually without significant effects on ventilation or circulation. The answer is (E)" (Trevor, Anthony J. et. al.,2002:243).

#### ST:

#### "CEVAPLAR

1. Lokal anestezipler özellikle açık ve inaktif durumdaki sodyum kanallarına bağlanırlar. Normal inaktivasyona oranla ilaçla indüklenmiş blok 10 ile 1000 kez daha geç ortadan kalkar. istirahat halindeki kanalların lokal anesteziplere hassasiyeti daha azdır. Cevap (B)

2. İlaç zayıf baz olduğunda, kendi pKa'sından düşük pH değerlerinde daha fazla iyonize olur. Söz konusu pKa'dan 1 log birim daha az ise (daha fazla asid) iyonize ilacın iyonize olmayana oranı yaklaşık pH, 90/10'dur. Cevap (D). (Birinci bölümden hatırlayınız pH, pKa'ya eşitse oran 1/1'dir; 1 log birim fark olduğunda 99/1; vb.)

3. Küçük çaplı lifleri lokal anesteziplere, büyük çaplı liflerden daha hassa ve daha hızlı

bloke olurlar. anesteziiden çıkışta ilacın lokal konsantrasyonu da azalır, ancak küçük lifler bloke olmaya eder devam ve lokal anesteziik etkiden en geç kurtulurlar. Cevap (D).

4. Lokal anesteziiklerin (amid ya da ester) aşırı dozuyla ilgili olarak belirtilen en önemlisi ile ilgili olanıdır. Bu etkiler, sedasyon ya da huzursuzluk, nistagmus, konvülsiyon, koma ve solunum yetersizliği olabilir. Diazepam genellikle solunum ve dolaşım üzerine belirgin etkisi olmadan, lokal anesteziiklere bağlı konvülsiyonların tedavisinde kullanılır. Cevap (E)" (Özgön, 2002:243).

The terms in answers section which have been borrowed from SL or translated word-for-word are listed in the tables below:

| Answer 1                    |                              |
|-----------------------------|------------------------------|
| ST                          | TT                           |
| local anesthetics           | lokal anesteziikler          |
| sodium channels             | sodyum kanalları             |
| open and inactivated states | açık ve inaktive durum       |
| drug-induced block          | indüklenmiş blok             |
| normal inactivation         | normal inaktivasyon          |
| resting channels            | istirahat halindeki kanallar |
| lower affinity              | hassasiyeti daha az          |

| Answer 2             |           |
|----------------------|-----------|
| ST                   | TT        |
| drug                 | ilaç      |
| weak base            | zayıf baz |
| ionized (protonated) | iyonize   |
| unit                 | birim     |

| Answer 3            |                     |
|---------------------|---------------------|
| ST                  | TT                  |
| smaller-diameter    | küçük çaplı         |
| nerve fibers        | sinir lifleri       |
| local anesthetics   | lokal anesteziiler  |
| (are) blocked       | bloke (olurlar)     |
| local concentration | lokal konsantrasyon |

| Answer 4         |                    |
|------------------|--------------------|
| ST               | TT                 |
| amide and ester  | amid ya da ester   |
| local anesthetic | lokal anestezikler |
| overdose         | aşırı doz          |
| sedation         | sedasyon           |
| restlessness     | huzursuzluk        |
| nystagmus        | nistagmus          |
| convulsions      | konvülziyon        |
| coma             | koma               |
| diazepam         | diazepam           |
| ventilation      | solunum            |
| circulation      | dolaşım            |

Similar to the translation of questions, translation of all answers provides the same meaning as the ST. The terms "*local anesthetics*", "*sodium channels*", "*normal inactivation*", "*ionized*", "*local concentration*", "*amide*" and "*ester*", "*sedation*", "*nystagmus*", "*convulsions*", "*coma*", and "*diazepam*" have been translated in Turkish with the method of borrowing as shown in the table above. The other terms have been translated word-for-word. Therefore, this translation delivers the exact message to the target readers, which is essential when medical and pharmacological texts are considered.

All in all, functionalism, coherency and fidelity of the coursebook have been analyzed in this chapter. It is also seen that the textbook's compliance with all these three rules serves the purpose of the book. Containing all the features that have been explained above make the textbook to fulfil its aim in the target culture and language.

## CONCLUSION

In this thesis, *Katzung and Trevor's Pharmacology Examination and Board Review* which is a course book that is taught at medicine and pharmacology faculties is analyzed within the framework of Skopos theory and whether the translation of the book fulfils its skopos in the target culture or not have been questioned.

The first chapter has provided information about the scope of pharmacology as well as a historical background for the evaluation of pharmacological texts. To this end, pharmacology as a discipline has been searched for and its importance has been discussed. Pharmacology which can be regarded as the backbone of medicine plays an essential role in the treatment of diseases. As Scheindlin indicates “pharmacology is one of the cornerstones of the drug discovery process” (2001:87). Pharmacological researches dates back to ancient times. Ancient people looked for and tested on plants and herbs to find remedies for pains and different kinds of illnesses. Pharmacology is accepted to have arisen in those times thanks to ancient people. For instance, in ancient Egypt, therapeutic resources have been discovered in Ebers Papyri. Similarly, in ancient Greek, Hipocrates (M.Ö.460–377) developed successful treatments and Galen (M.S. 131– 201) continued to improve and pass on Hipocrates findings (Kaya, 2002). Likewise, Islamic countries continued to study on herbs. As for the developments in the field of pharmacology in Turkey, although it is known that studies on drugs began in the late 19<sup>th</sup> century during the Ottoman Empire, the establishment of the Republic of Turkey gave momentum to studies on pharmacology. Translation of sources from other languages into Turkish gave momentum to the development of pharmacology in Turkey. Therefore, the number of faculties and departments of pharmacology increased in Turkey in the 1960s and Turkish Pharmacology Society was founded in 1966. All in all, it can be concluded that pharmacology has developed in parallel with treatments in the field of medicine. As it is known, drug formulation and discovery is a never-ending process. Today, new discoveries are being made in this field.

Due to these developments mentioned above, both new books in this field have been written in Turkish and pharmacological sources have been translated into Turkish. The book entitled *Katzung and Trevor's Pharmacology Examination and Board Review* was translated into Turkish and it has been used as a course book and a test book in medicine and pharmacy faculties. The reason why *Katzung and Trevor's Pharmacology Examination and Board Review* was chosen in this study is to analyze the function of the book in the source culture.

With the aim of achieving a final conclusion of the analysis of the book, the research questions given in Introduction are answered as follows:

1. Within the framework of technical translation, what kind of factors play a role in shaping the translation process and providing a functional TT?

As a result of the analysis of the ST and the TT, it can be understood that a pre-determined function of the TT in the target culture which is aimed to be achieved as a result of translation process plays the primary role in shaping the translation process and the TT. As Reiss and Vermeer indicates in the first rule of hierarchical order, a translatum (or TT) is determined by its skopos, and in the last rule the predominating rule, i.e. the skopos rule holds the first place (1984:119).

In this case, as the translated text is a technical text, some other factors plays a secondary role to provide a functional TT in the target culture. The specific characteristics of pharmacological texts requires the text to be translated almost literally to give the exact meaning. These features are the usage of medical and pharmacological terminology including the words, prefixes and suffixes with Latin or Greek origin, eponyms, abbreviations and acronyms. The translation of these words makes the translation functional in a way that the students have a good knowledge of the related international terminology in this field. Moreover,

they become used to both the terms and the topics, which will help them in national post-graduate examinations and in the examinations of their faculties.

## 2. What is the role of Skopos Theory in the translation of pharmacological texts?

Skopos theory is based on the idea that every translational action has an intention to fulfil and 'aim' or skopos must be 'potentially specifiable' (Vermeer, 2000:227-238). It is one of the functional theories developed by German translation scholar Prof. Dr. Hans Josef Vermeer in the 1970s. The theory depends on the purpose of TT and translation methods and strategies are determined according to the skopos. By applying these methods and strategies, it is aimed to achieve a functionally adequate TT or the translatum. The TT is also expected to be interpretable and coherent with the TT receiver's situation (Reiss and Vermeer, 1984:113). Reiss and Vermeer also indicates that coherence must be achieved between the TT and the ST or between i) the ST information received by the translator, ii) The interpretation that the translator makes of this information, and iii) the information that is encoded for the TT (2013:101). The hierarchical order of the rules that was put forward by Vermeer indicates that according to skopos theory, intertextual coherence is of less importance than intratextual coherence. But the first rule, which is the skopos rule dominates all. That means, according to skopos theory, the same text can be translated in different ways and the purpose of the TT and the commission determines the result. Within this scope, the skopos must definitely be stated explicitly or implicitly in the commission.

In this study, *Katzung and Trevor's Pharmacology Examination and Board Review* has been analyzed within the framework of Vermeer's skopos, coherence, and fidelity rule. These rules are applied in this study. The outcome regarding this analysis are as follows:

The first rule of Vermeer's hierarchical order indicates that a translatum (or TT) is determined by its skopos. *Katzung and Trevor's Pharmacology Examination and Board Review* is a book which is used in pharmacological studies and taught in medicine and pharmacy faculties. The book fulfils its function as a course book on pharmacological studies. Detailed definitions of the topics, explanations, tables, charts, illustrations, figures, and question and answer sections are useful for people who study in this field. It also helps students both understand the topics and prepare for course and board examinations. Review pages, checklists, and practice questions and their answers and explanations are useful for any kind of examination related to pharmacology. By introducing drugs and drug groups, the book supports students both during the study and at work. As single best answer type questions are seen commonly in examinations in Turkey, the translation of the book supports Turkish students in their course examinations and TUS (Examination for Speciality in Medicine). Moreover, it gives strategies for basic study and question formats that are applicable to all kind of examinations. Therefore, *Katzung and Trevor's Pharmacology Examination and Board Review* is not only a course book but it is also a substantial source for people who are in pursuit of preparation for pharmacology exams. Consequently, it can be said that the book fulfils its function in the SL.

According to coherence rule, a TT must be coherent with ST. As Reiss and Vermeer indicates, there must be coherence between the translatum and the ST (1984:119). This study shows that the TT is coherent with the ST in several ways. The message that has been conveyed in both the ST and the TT are in parallel in terms of definitions, explanations, and visual aids such as the tables and figures. Hence, as indicated by Reiss and Vermeer in the hierarchical rules, a TT is an offer of information in a target culture and TL concerning an offer of information in a source culture and SL (1984:119). Since *Katzung and Trevor's Pharmacology Examination and Board Review* has been taught in many universities throughout the country, it is concluded that the translation of *Katzung and Trevor's Pharmacology Examination and Board Review* is a product of offer of information in the source culture and language. This offer

results from the need of a comprehensive source in pharmacology and the aim to keep up with the latest advancements in this field. Therefore, the translation of *Katzung and Trevor's Pharmacology Examination and Board Review* is a product of the target culture and it is coherent in the target culture.

Lastly, fidelity rule which refers to faithful translations is based on the concept of translating the ST by keeping the context intact. In this way, the message of the ST remains the same by delivering the precise context using the same literary qualities. In the analysis of translation of *Katzung and Trevor's Pharmacology Examination and Board Review* in the view of fidelity rule, the following points are identified:

Throughout the textbook, terminology, schemes, and figures are kept the same in translation, too. Additionally, eponyms are preserved the same in the TT. No additional information was given regarding the diseases and methods which are named after a person. Similarly, as shown in the examples, the terms and explanations in the tables are almost kept intact. Furthermore, the case histories in the textbook are delivered without changing or distorting the background of the stories. No extra information was added to the case stories, and no information was deleted from the context. Similar to other parts of the textbook, terms in the TT are borrowed from the ST or translated word-for-word. Question and answers sections have also been translated without changing the content and by keeping the same terms in the TT. As a result, it can be concluded that fidelity rule has been maintained in the TT.

All things considered, TT is in comply with three main rules of skopos theory: skopos rule, coherence rule and fidelity rule. It serves the same purpose in target culture. To achieve the same purpose, both internal textual and intertextual coherence are maintained in th TT.

3. How does the purpose and the reason of a specific book chosen and translated contribute to the training of students at medical and pharmacology faculties?

This thesis puts forward that all translation actions have a purpose similar to any other actions in the world and the aim of the translation of *Katzung and Trevor's Pharmacology Examination and Board Review* is to utilize it firstly as a course book in the faculties of medicine and pharmacy and secondly to get prepared for the exams related to medicine and pharmacy such as term or final examination at universities, and the examinations like TUS and USMLE that can be taken after graduation. The translation of *Katzung and Trevor's Pharmacology Examination and Board Review* has been utilized both as a course book and as a test book in Turkey. Knowing the purpose of the translation contributes to the function of the ST in a way that the needs, expectations and background knowledge of the students are given primary importance in line with the Skopos theory. Translation of technical texts requires a collaborative work of translators and the experts of the field. Within this scope, the translators of the textbook, who are doctors of medicine, aimed to render the TT functional in the target culture. As the translators are experts in this field, they used the suitable translation methods to cater for the needs of the target reader. First of all, taking the background medical and pharmacological information of the students into account, different specific topics are explained in detail in each chapter. Moreover, the tables, figures, and cases each of which provide a related example of the topic help students conceive the topic. In addition, there are comprehensive tests at the end of each chapter. They not only help students understand review the related chapter but, as it has been stated above, they also support the students in their post-graduate examinations such as USMLE in the USA and TUS in Turkey.

All in all, this study aims at analysing the translation of pharmacological texts within the framework of Skopos Theory. It can be said in the light of the analysis and the inferences that the skopos of the texts determines the translation

process and the function of the TT in the target culture. To fulfill this, the translator is required to abide by the commission and use appropriate translation strategies so that the TT fulfils its function in the target culture. It is hoped that this thesis will pave the way for future studies in the field of translation of pharmacological texts.



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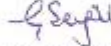
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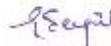
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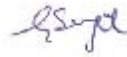
## APPENDIX 1: ETİK KURUL İZİN MUAFİYET FORMU

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
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|  <div style="display: inline-block; text-align: left; margin-left: 10px;"> <b>HACETTEPE ÜNİVERSİTESİ</b><br/> <b>SOSYAL BİLİMLER ENSTİTÜSÜ</b><br/> <b>TEZ ÇALIŞMASI ETİK KOMİSYON MUAFİYETİ FORMU</b> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>HACETTEPE ÜNİVERSİTESİ</b><br><b>SOSYAL BİLİMLER ENSTİTÜSÜ</b><br><b>MÜTERCİM TERCÜMANLIK ANABİLİM DALI BAŞKANLIĞINA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Tarih: 06/07/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <p>Tez Başlığı: FARMAKOLOJİ METİNLERİNİN ÇEVİRİSİ: KATZUNG VE TREVOR'IN FARMAKOLOJİ KİTABINA YÖNELİK İŞLEVSEL BİR DURUM ÇALIŞMASI.</p> <p>Yukarıda başlığı gösterilen tez çalışmam:</p> <ol style="list-style-type: none"> <li>1. İnsan ve hayvan üzerinde deney niteliği taşımamaktadır;</li> <li>2. Biyolojik materyal (kan, idrar vb. biyolojik sıvılar ve numuneler) kullanılmamasına gerektirilmemektedir;</li> <li>3. Beden bütünlüğüne müdahale içermemektedir;</li> <li>4. Gözlemsel ve betimsel araştırma (anket, mülakat, fotoğraf/skane çalışmaları, dosya taramaları, veri kaynakları taraması, sistem-model geliştirme çalışmaları) niteliğinde değildir.</li> </ol> <p>Hacettepe Üniversitesi Etik Kurulları ve Komisyonlarının Yönergelerini inceledim ve bunlara göre tez çalışmamın yürütülmesi için herhangi bir Etik Kurul/Komisyon'dan izin alınmasına gerek olmadığını; aksi durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.</p> <p>Gereğini saygılarımla arz ederim.</p> |
| <br>06/07/2018<br>Tarih ve İmza                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <p>Adı Soyadı: ESRA ŞENGÜL</p> <p>Öğrenci No: N10126480</p> <p>Anabilim Dalı: MÜTERCİM TERCÜMANLIK ANABİLİM DALI</p> <p>Programı: İNGİLİZCE MÜTERCİM TERCÜMANLIK</p> <p>Statüsü: <input checked="" type="checkbox"/> Yüksek Lisans <input type="checkbox"/> Doktora <input type="checkbox"/> Bütünleşik Doktora</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <p><b>DANIŞMAN GÖRÜŞÜ VE ONAYI</b></p> <p style="text-align: center;">Uygundur</p> <p style="text-align: center;">A. Ş.</p> <p style="text-align: center;">Prof. Dr. Asalet Ökten</p> <p style="text-align: center;">(Unvan, Ad Soyad, İmza)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Detaylı Bilgi: <a href="http://www.sosyalbilimler.hacettepe.edu.tr">http://www.sosyalbilimler.hacettepe.edu.tr</a></p> <p>Tel: 0-312-2976860 Faks: 0-312-2992147 E-posta: <a href="mailto:sosyalbilim.cr@hacettepe.edu.tr">sosyalbilim.cr@hacettepe.edu.tr</a></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |

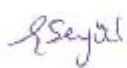
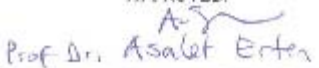
## APPENDIX 2: ETHICS BOARD WAIVER FORM FOR THESIS WORK

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|----------------------|-------------|--------------------|-----------|--------------------|------------------------------|-----------------|-----------------------------------------|----------------|-------------------------------------------------------------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>HACETTEPE UNIVERSITY</b><br><b>GRADUATE SCHOOL OF SOCIAL SCIENCES</b><br><b>ETHICS COMMISSION FORM FOR THESIS</b> |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <b>HACETTEPE UNIVERSITY</b><br><b>GRADUATE SCHOOL OF SOCIAL SCIENCES</b><br><b>TO THE DEPARTMENT OF TRANSLATION AND INTERPRETING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| Date: 06/07/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| Thesis Title: THE TRANSLATION OF PHARMACEUTICAL TEXTS: A FUNCTIONAL CASE STUDY ON KATZUNG & TREVOR'S TEXTBOOK OF PHARMACOLOGY                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| My thesis work related to the title above:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <ol style="list-style-type: none"> <li>1. Does not perform experimentation on animals or people.</li> <li>2. Does not necessitate the use of biological material (blood, urine, biological fluids and samples, etc.).</li> <li>3. Does not involve any interference of the body's integrity.</li> <li>4. Is not based on observational and descriptive research (survey, interview, measures/scales, data scanning, system-model development).</li> </ol>                                                                                                                  |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| I declare, I have carefully read Hacettepe University's Ethics Regulations and the Commission's Guidelines, and in order to proceed with my thesis according to these regulations I do not have to get permission from the Ethics Board/Commission for anything; in any infringement of the regulations I accept all legal responsibility and I declare that all the information I have provided is true.                                                                                                                                                                  |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| I respectfully submit this for approval.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <br>06/07/2018<br>Date and Signature                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;"><b>Name Surname:</b></td> <td>GSRA SENGÜL</td> </tr> <tr> <td><b>Student No:</b></td> <td>N10126480</td> </tr> <tr> <td><b>Department:</b></td> <td>TRANSLATION AND INTERPRETING</td> </tr> <tr> <td><b>Program:</b></td> <td>TRANSLATION AND INTERPRETING IN ENGLISH</td> </tr> <tr> <td><b>Status:</b></td> <td> <input checked="" type="checkbox"/> MA           <input type="checkbox"/> Ph.D.           <input type="checkbox"/> Combined MA/ Ph.D.         </td> </tr> </table> |                                                                                                                      | <b>Name Surname:</b> | GSRA SENGÜL | <b>Student No:</b> | N10126480 | <b>Department:</b> | TRANSLATION AND INTERPRETING | <b>Program:</b> | TRANSLATION AND INTERPRETING IN ENGLISH | <b>Status:</b> | <input checked="" type="checkbox"/> MA <input type="checkbox"/> Ph.D. <input type="checkbox"/> Combined MA/ Ph.D. |
| <b>Name Surname:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | GSRA SENGÜL                                                                                                          |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <b>Student No:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | N10126480                                                                                                            |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <b>Department:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | TRANSLATION AND INTERPRETING                                                                                         |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <b>Program:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | TRANSLATION AND INTERPRETING IN ENGLISH                                                                              |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <b>Status:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | <input checked="" type="checkbox"/> MA <input type="checkbox"/> Ph.D. <input type="checkbox"/> Combined MA/ Ph.D.    |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| <b><u>ADVISER COMMENTS AND APPROVAL</u></b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |
| Approved<br><br>Prof. Dr. Asalet Erten<br>(Title, Name Surname, Signature)                                                                                                                                                                                                                                                                                                                                                                                                              |                                                                                                                      |                      |             |                    |           |                    |                              |                 |                                         |                |                                                                                                                   |

## APPENDIX 3: ORJİNALLİK RAPORU

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
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|  <div style="margin-left: 20px;"> <b>HACETTEPE ÜNİVERSİTESİ</b><br/> <b>SOSYAL BİLİMLER ENSTİTÜSÜ</b><br/> <b>YÜKSEK LİSANS TEZ ÇALIŞMASI ORJİNALLİK RAPORU</b> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>HACETTEPE ÜNİVERSİTESİ</b><br><b>SOSYAL BİLİMLER ENSTİTÜSÜ</b><br><b>MÜTERCİM TERCÜMANLIK ANABİLİM DALI BAŞKANLIĞINA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Tarih: 06/07/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <p>Tez Başlığı : FARMAKOLOJİ METİNLERİNİN ÇEVİRİSİ: KATZUNG VE TREVOR'IN FARMAKOLOJİ KİTABINA YÖNELİK İŞLEVSEL BİR DURUM ÇALIŞMASI</p> <p>Yukarıda başlığı gösterilen tez çalışmamın a) Kapak sayfası, b) Giriş, c) Ana bölümler ve d) Sonuç kısımlarından oluşan toplam 127 sayfalık kısmına ilişkin, 06/07/2018 tarihinde şahsım/tez danışmanım tarafından Turnitin adlı intihâl tespit programından aşağıda işaretlenmiş filtrelemeler uygulanarak alınmış olan orijinallik raporuna göre, tezinin benzerlik oranı % 8 'dir.</p> <p>Uygulanan filtrelemeler:</p> <ol style="list-style-type: none"> <li>1- <input checked="" type="checkbox"/> Kabul/Onay ve Bildirim sayfaları hariç</li> <li>2- <input checked="" type="checkbox"/> Kaynakça hariç</li> <li>3- <input checked="" type="checkbox"/> Alıntılar hariç</li> <li>4- <input type="checkbox"/> Alıntılar dâhil</li> <li>5- <input checked="" type="checkbox"/> 5 kelimeden daha az örtüşme içeren metin kısımları hariç</li> </ol> <p>Hacettepe Üniversitesi Sosyal Bilimler Enstitüsü Tez Çalışması Orijinallik Raporu Alınması ve Kullanılması Uygulama Esaslarını inceledim ve bu Uygulama Esasları'nda belirtilen azami benzerlik oranlarına göre tez çalışmamın herhangi bir intihâl içermediğini; aksinin tespit edileceği muhtemel durumda doğabilecek her türlü hukuki sorumluluğu kabul ettiğimi ve yukarıda vermiş olduğum bilgilerin doğru olduğunu beyan ederim.</p> <p>Gereğini saygılarımla arz ederim.</p> <div style="text-align: right; margin-top: 20px;"> <br/> 06/07/2018<br/> Tarih ve İmza </div> <div style="margin-top: 20px;"> <p><b>Adı Soyadı:</b> ESRA ŞENGÜL</p> <p><b>Öğrenci No:</b> N10125480</p> <p><b>Anabilim Dalı:</b> MÜTERCİM TERCÜMANLIK ANABİLİM DALI</p> <p><b>Programı:</b> İNGİLİZCE MÜTERCİM TERCÜMANLIK</p> </div> |
| <p><b><u>DANIŞMAN ONAYI</u></b></p> <p style="text-align: center;">UYGUNDUR.</p> <div style="text-align: center; margin-top: 20px;"> <br/> Prof. Dr. Asalet Ertan<br/> (Unvan, Ad Soyad, İmza) </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

## APPENDIX 4: THESIS ORIGINALITY REPORT

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|----------------------|-------------|--------------------|-----------|--------------------|------------------------------|-----------------|--------------------------------------------------------------|
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>HACETTEPE UNIVERSITY</b><br><b>GRADUATE SCHOOL OF SOCIAL SCIENCES</b><br><b>MASTER'S THESIS ORIGINALITY REPORT</b> |                      |             |                    |           |                    |                              |                 |                                                              |
| <b>HACETTEPE UNIVERSITY</b><br><b>GRADUATE SCHOOL OF SOCIAL SCIENCES</b><br><b>TO THE DEPARTMENT OF TRANSLATION AND INTERPRETING</b>                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| Date: 06/07/2018                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| Thesis Title : THE TRANSLATION OF PHARMACEUTICAL TEXTS: A FUNCTIONAL CASE STUDY ON KATZUNG & TREVOR'S TEXTBOOK OF PHARMACOLOGY                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| According to the originality report obtained by myself/my thesis advisor by using the Turnitin plagiarism detection software and by applying the filtering options checked below on 06/07/2018 for the total of 127 pages including the a) Title Page, b) Introduction, c) Main Chapters, and d) Conclusion sections of my thesis entitled as above, the similarity index of my thesis is 8 %.                                                                                                                                                                      |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| Filtering options applied: <ol style="list-style-type: none"> <li>1. <input checked="" type="checkbox"/> Approval and Declaration sections excluded</li> <li>2. <input checked="" type="checkbox"/> Bibliography/Works Cited excluded</li> <li>3. <input checked="" type="checkbox"/> Quotes excluded</li> <li>4. <input type="checkbox"/> Quotes included</li> <li>5. <input checked="" type="checkbox"/> Match size up to 5 words excluded</li> </ol>                                                                                                             |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| I declare that I have carefully read Hacettepe University Graduate School of Social Sciences Guidelines for Obtaining and Using Thesis Originality Reports; that according to the maximum similarity index values specified in the Guidelines, my thesis does not include any form of plagiarism; that in any future detection of possible infringement of the regulations I accept al. legal responsibility; and that all the information I have provided is correct to the best of my knowledge.                                                                  |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| I respectfully submit this for approval.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| <br>06/07/2018<br>Date and Signature                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                       |                      |             |                    |           |                    |                              |                 |                                                              |
| <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 20%;"><b>Name Surname:</b></td> <td style="border-bottom: 1px solid black;">ESRA ŞENGÜL</td> </tr> <tr> <td><b>Student No:</b></td> <td style="border-bottom: 1px solid black;">N10126480</td> </tr> <tr> <td><b>Department:</b></td> <td style="border-bottom: 1px solid black;">TRANSLATION AND INTERPRETING</td> </tr> <tr> <td><b>Program:</b></td> <td style="border-bottom: 1px solid black;">TO THE DEPARTMENT OF TRANSLATION AND INTERPRETING IN ENGLISH</td> </tr> </table> |                                                                                                                       | <b>Name Surname:</b> | ESRA ŞENGÜL | <b>Student No:</b> | N10126480 | <b>Department:</b> | TRANSLATION AND INTERPRETING | <b>Program:</b> | TO THE DEPARTMENT OF TRANSLATION AND INTERPRETING IN ENGLISH |
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