Araştırma Makalesi – Original Article

Influence of Dioscorides on Simple Drugs Chapter of Ibn Sina's the Canon of Medicine*

İbn-i Sina'nın Kanun Adlı Eserinin Basit İlaçlar Bölümünde Dioskorides Etkisi

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ABSTRACT

Objectives: The aim of the study is determining the influence of Dioscorides on Ibn Sina in the context of simple drugs.

Materials and Methods: The second book of The Canon of Medicine on simple drugs was screened and the articles on which Dioscorides cited were sought out and evaluated.

Results: In the second book of The Canon of Medicine, 87 substances in which Dioscorides was referenced were identified. 75 of these substances are herbal, 6 animal and 6 mineral.

Conclusion: As one of the important work of Greco-Roman medicine, De Materia Medica has a strong influence on Greco-Arab medicine. This is also confirmed by our study on simple drugs chapter of Ibn Sina's The Canon of Medicine.

Keywords: Dioscorides, Ibn Sina, Simple Drugs, Greco-Arab Medicine

ÖZ

Amaç: Çalışmanın amacı, basit ilaçlar bağlamında Dioskorides'in İbn-i Sina üzerindeki etkisini belirlemektir.

Gereç ve Yöntem: Kanun'un basit ilaçlar üzerine olan ikinci kitabı taranmış ve Dioskorides'in anıldığı maddeler aranarak değerlendirmesi yapılmıştır.

Bulgular: Kanun'un ikinci kitabında Dioskorides'in refere edildiği 87 madde tespit edilmiştir. Bunların 75'i bitkisel, 6'sı hayvansal ve 6'sı madenseldir.

Sonuç: Greko-Roman tıbbının önemli eserlerinden biri olan De Materia Medica'nın Greko-Arap tıbbı üzerinde güçlü bir etkisi olmuştur. Bu durum İbn-i Sina'nın Kanun'unun basit ilaçlar içeren bölümü üzerine yaptığımız çalışmayla da ortaya çıkmaktadır.

Anahtar kelimeler: Dioskorides, İbn-i Sina, Basit İlaçlar, Greko-Arap Tıbbı

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INTRODUCTION

Greco-Arab medicine began with the translation of the texts of Greco-Roman medicine to Arabic from the 7th century onwards, the most eminent authors of which grew up in the Xth-XIth centuries, and today it is a pattern that continues its existence under the name of Unani medicine.[1] The theoretical basis is the theory of four humors, and its procedures mainly consist of herbal drug treatments. The acknowledged authors of Greco-Roman medicine, Hippocrates, Galen and Dioscorides, were adopted by this mentality; their works were translated, multiplied, shared and used as main sources.[1,2] Ibn Sina, the most important name of Greco-Arab and medieval western medicine, also referred to the classical medical authors, mainly Hippocrates, Galen and Dioscorides, in his works.[1] *The Canon of Medicine* is the most comprehensive work on medicine of Ibn Sina. In this study, which is the aim of determining the influence of Dioscorides on Ibn Sina, the second book of Canon on simple drugs was screened and the articles on which Dioscorides cited were sought out and evaluated.

Ibn Sina, full name Abu Ali al-Husayn ibn Abd Allah ibn Sina (980-1037), known as Avicenna in Europe, was a Persian philosopher, scientist and physician who is regarded as one of the most significant thinkers and writers of the Arabic Golden Age.[1] He was born near Bukhara. He composed the *The Book of Healing* (*Kitāb al-shifāʾ*), a philosophical and scientific encyclopaedia, and *The Canon of Medicine* (*Al-Qānūn fī al-ṭibb*), which is among the most famous books in the history of medicine. *The Canon of Medicine* was used as the standard medical textbook in the Islamic world and Europe up to the 18th century. It still plays an important role in Unani medicine.[3,4]

The Canon of Medicine consists of five books. The first book concerns basic medical and physiological principles as well as anatomy, regimen and general therapeutic procedures based on the theory of humoral pathology. The second book is on simple drugs that are the favorite choice of therapy of author, arranged alphabetically.[5] The third book concerns the diagnosis and treatment of diseases specific to one part of the body, while the fourth covers conditions not specific to one bodily part, such as poisonous bites and obesity. Finally, fifth book is a formulary of compound remedies.[5-7]

Dioscorides of Anazarbus was a Greek physician born in southeast Asia Minor in the Roman Empire in the first century. Dioscorides studied botany and pharmacology in Tarsus, a nearby city with a collection of teachers in these specialties. Dioscorides would have inherited a long history of pharmacological data, much as he outlines in the preface to his work. During his lifetime, Dioscorides traveled extensively seeking medicinal substances from all over the Roman and Greek world. Between about 50-70 AC, he wrote his fundamental work in Greek, *Peri Hyles Iatrikhes*, known in Latin as *De Materia Medica* and in Arabic *Kitab al-Hashaish*. Dioscorides' study became the most central pharmacological work in Europe and the Middle East for the next sixteen centuries and remained influential in botanical nomenclature until the appearance of the Linnaeus' "*Species plantarum*" in 1753.[8,9]

Dioscorides came from the rational Greco-Roman medical tradition but he is not easily categorized within the swirl of his period's controversies. He rejected schools of medicine and theory of four humors which was so common in his time. He arranged natural products used as drug according to their physiological effects on the body.[8]

In *De Materia Medica*, Dioscorides classed simples in large groups: first book is on aromatics, oils, salves, trees and shrubs (liquids, gums, and fruits), second book is on animals, parts of animals, animal products, cereals, pot herbs, and sharp herbs, third book is on roots, juices, herbs and seeds, fourth book is on roots and herbs, fifth book is on wines and minerals. *De Materia Medica* consists of 654 plant, 84 animal and 89 mineral products.[9]

In the literature, Yıldırım's study on *De Materıa Medica* of Dioscorides in The Islamic Era,[10] Nasser, Tibi and Savage-Smith's Ibn Sina's Canon of Medicine: XIth century rules for assessing the effects of drugs,[7] Saad and Said's Greco-Arab and Islamic Herbal Medicine: Traditional System, Ethics, Safety, Efficacy and Regulatory Issues[1] have close content with our study but none of them focus on relationship between Dioscorides and Ibn Sina.

MATERIALS and METHODS

In this study, English translation of second book of *The Canon of Medicine*, based on Hagia Sophia manuscript in Arabic (Istanbul, 1222) which had been compiled by a scholar team at Hamdard University was taken as the main text.[11]

During early period of the study, all articles of the second book are read and detected to find out the parts in which Dioscorides is mentioned nominally. Secondly, the character of citation has been evaluated; in this manner utilization approach of Ibn Sina from the work of Dioscorides is established. There are apparent differences between article formats of Dioscorides and Ibn Sina. Arrangment order of the books are also different; Dioscorides prefer to line up drugs according to their treatment characteristics, Ibn Sina's choice is to line up then in alphabetical order. In this context, it's difficult to match all articles of *De Materia Medica* and *The Canon of Medicine*. The articles that can be matched, are evaluated comparatively. In this stage, Lilly Beck's English translation of *De Materia Medica* is used.[12] There are several English translations of *De Materia Medica*, Beck's one is preferred among them because of its newness and comprehensiveness.[13,14]

RESULTS

In second book of Canon of Medicine, Ibn Sina has described 785 simple drugs. Most of them are herbal drugs and they are described in the following order;

1- Different common names

2- Botanical description and habitat

3- 'Temperament' as humoral property (whether they are cold or hot; dry or moist)

4- Method of selection

5- Properties

6- Cosmetic use

7- Effects on specific organs

8- Toxic and side effects

9- Effects in case of fever

10- Equivalent

In the second book of Canon of Medicine, 87 substances in which Dioscorides was referenced were identified. 75 of these substances are herbal, 6 animals and 6 minerals. Animal drugs are land rabbit, cheese, blood, lizard, bee's wax and swallow; Mineral drugs are diamond, alum, earth of cultivated lands, Samian earth, a bituminous earth and sealing clay. 65 of 75 herbal drugs have benefited from the botanical descriptions of Dioscorides.

In the ***Table 1***, all drugs are shown in the alphabetical order of Arabic names; the first column contains Arabic and the second column contains English names, and the third corresponds to modern scientific

terminology; article's sub-sections in which Dioscorides mentioned are shown in the fourth column. Without doubt there is always a risk of synonymity mistake between original Arabic and modern scientific names of plants. Matches in the table are based on Hamdard University English edition of *The Canon of Medicine*.

Table 1. Simple Drugs List [11]

ARABIC	ENGLISH	MODERN SCIENTIFIC	CITATION
LETTER ALIF			
Ābnūs	Ebony	Diospyros ebenum Koenig.	Nature, Botanical description
Ādhān al-fār	Mouse ear	Auricula muris	Nature, Botanical description, Wounds and ulcers
Ādharyūn	Sun flower	Helianthus annuus L.	Exretory organs
Ijjāş	Bukhara plum	Prunus domestica	Actions and properties, Exretory organs
Idhkhir	Bog rush	Andropogon schoenanthus L.	Nature, Botanical description
Arnab barrī	Land rabbit	Lepus terrist	Cosmetics
Aşţarak	Storax	Styrax officinalis L.	Nature, Botanical description
Āzfār al-ţīb	Ungues	Strombus sp.	Nature, Botanical description
Aqāqiā	Wild gum arabic tree	Acacia arabica Willd.	Nature, Botanical description
Uqḥuwān	Bachlor's bolton's	Pyrethrum parthenium	Nature, Botanical description
Iklil al-malik	Sweet melilote	Melilotus officinalis L.	Nature, Botanical description
Allabakh	Lebbek tree	Balanites aegyptica L.	Nature, Botanical description
Almās	Diamond	Adamus	Action and properties
Îrsā	Iris	Iris sp.	Nature, Botanical description
LETTER BA			
Baqla yamānia	Bliton	Amaranthus blitum L.	Nature, Botanical description
Balsān	Balsam	Commiphora opobalsamum	Nature, Botanical description
LETTER TĀ			
Tūdarī	Erysimon	Erysimum scoparium	Nature, Botanical description
LETTER JÎM			
Jubn	Cheese		Food
Jazr	Carrot	Daucus carota L.	Nature, Botanical description
Jummaiz	Cluster fig	Ficus racemosa	Nature, Botanical description, Food
LETTER ḤĀ			
Hāshā	Wild thyme	Thymus vulgaris L.	Nature, Botanical description, Eye
Ḥab al-ṣanobar	Edible pine	Pinus gerardiana Wall.	Food
Ḥurf	Garden cress	Lepidium sativum L.	Nature, Botanical description
Ḥarmal	Syrian rue	Peganum harmala L.	Eye
Ḥazāz al-sakhr	Stone flower	Permelea perlata Ach.	Action and properties
Ḥasak	Caltrops	Tribulus terrestris L.	Temperament
Ḥuḍaḍ	Ophthalmic barberry	Berberris aristata Dc.	Nature, Botanical description
Ḥiltit	Assafoetida	Ferula assa-foetida L.	Nature, Botanical description
Ḥamāmā	Cardamom	Elettaria cardamomum L.	Nature, Botanical description
Ḥinnā'	Henna	Lawsonia alba L.	Nature, Botanical description
LETTER KHĀ			
Khāniq al-namir	Panther's bane	Aconitum pardalianches	Nature, Botanical description
Khaṯṯāf	House martin, swallow	Hirundo urbica	
LETTER DĀL			
Dār ṣīnī	Cinnamon	Cinnamomum zeylanicum	Nature, Botanical description
Dirdār	Elm (tree)	Ulmus campestris L.	Nature, Botanical description
Dam	Blood	Sanguine	Poisons
LETTER ZĀ			
Zarāwand	Indian birthwort	Aristolochia indica L.	Nature, Botanical description
Za'rūr	Azarole	Mespilus azarolus L.	Nature, Botanical description
Zūfrā	Goldy-locks	Chiliadenus iphionoides Boiss.	Nature, Botanical description
LETTER SĪN			
Sarīsh	Asphodel	Asphodelus sp.	Nature, Botanical description
Saṯrūniūm	Fox testis	Orchis rubra	Nature, Botanical description
Safīdūs	Wild cucumber	Ecballium elaterium L.	Nature, Botanical description
Saqmūniā	Scammony	Convolvulus scammonia L.	Nature, Botanical description
Salūthūn	Spider wort	Tredascentia sp.	Nature, Botanical description

Sunbul	Nard	Nardostachys jatamansi	Nature, Botanical description
LETTER SHĪN			
Shabb	Alum	Alumen	Nature, Botanical description
Shāqaiq al-nu'mān	Red anemone	Anemone coronaria L.	Nature, Botanical description
Shūkrān	Hemlock	Conium maculatum L.	Nature, Botanical description
LETTER TĀ'			
Tarāghiūn	Tragos	Pimpinella tragium	Action and properties
Tarāghiūn ākhar	Another kind of tragos		Excretion
Taraghāqanthā	Tragacanth	Astragulas gummifer Lab.	Nature, Botanical description
Tarfā	Tamarisk	Tamarix gallica L.	Nature, Botanical description
Tarīiūmānus	Maidenhair spleenwort	Asplenium trichomones L.	Nature, Botanical description
Tarīfūlīūn	Trifolium	Psoraleo bituminosa L.	Nature, Botanical description
Tūqriūs	Yellow germander	Teucrium flavum L.	Nature, Botanical description
Tiqāqawāūn	-	-	Nature, Botanical description
Tin al-ard al mazrū'a	Earth of cultivated lands	Terra eretria	Nature
Tin sāmā'i	Samian earth	Terra samia	Nature
Tin al-kara	A bituminous earth	Amphititis	Nature
Tin makhtūm	Sealing clay	Terra sigillata	Nature
LETTER 'AİN			
'Adas	Lentil	Lens esculenta Moench.	Nature, Botanical description
'Artanīthā	Greek cyclamen	Cyclamen europaeum L.	Nature, Botanical description
'Arqūn	Tuberous crane's bill	Geranium tuberosum L.	Nature, Botanical description
'Arn	Calamint	Calamintha incana Benth.	Nature, Botanical description
'Aşa al-rā'ī	Knot weed	Polygonum aviculare L.	Exretion
'Aşfar	Safflower	Carthamus tinctoris L.	Nature, Botanical description
'Azā'at	Lizard	Lacerta	Nature
'inab al-tha'lab	Garden night shade	Solanum nigrum L.	Nature, Botanical description
'An'īlī	Wild turnip	Brassica rapa L.	Nature, Botanical description
'ūd al-şalīb	Peony	Paeonia officinalis L.	Nature, Botanical description
'Ausaj	Desert-thorn	Lycium arabicum Schw.	Nature, Botanical description
LETTER QĀF			
Qaraz	Gum arabic tree	Acacia senegal	Nature, Botanical description
Qamarquraish	Fir	Picea abies L.	Nature, Botanical description
Qinnah	Galbanum	Ferula galbaniflua Boiss.	Nature, Botanical description
LETTER KĀF			
Kabīkaj	Wild celery	Apium petrosilinum L.	Nature, Botanical description description
Kathīrā	Gum tragacanth	Astragulus gummifer	Nature, Botanical description
Karāwiā	Caraway	Carum carvi L.	Nature, Botanical description
Karsannah	Peas	Pisum sativum L.	Botanical description
Karm	Grapevine	Vitis vinifera L.	Nature, Botanical description
Kurunb	Cabbage	Brassica oleracea L.	Nature, Botanical description, Eye, Food
Kuzbara	Coriander	Coriandrum sativum L.	Nature, Botanical description
Kamat	Truffle	Tuber cibarium	Nature, Botanical description
LETTER LĀM			
Lisān al-ḥamal	Great plantain	Plantago major L.	Nature, Botanical description
Lūf'	Dragon wort	Arum dracunculus L.	Nature, Botanical description
LETTER MĪM			
Mararah	Gall-bladder	Vesica fellea	Nature, Botanical description
Mūm	Bees' wax	Cera alba	Chest
LETTER WĀW			
Waj	Sweet scented flag	Acorus calamus L.	Nature, Botanical description
LETTER HĀ			
Hilyūn	Common asparagus	Asparagus officinalis L.	Nature, Botanical description

DISCUSSION

Dioscorides' *De Materia Medica* mentions so many simple drugs with a clear and fluent expression. Because of this it has stayed as a main source during centuries all over the old world. Greco-Arab medicine as a derivative of Greco-Roman medicine had adopted this book, its main authors referred Dioscorides frequently. *De Materia Medica* had been translated in Arabic several times from 9th century and also had been used as the first reference book for pharmacological and medical works. Razi (854-932), Biruni (973-

1052), Ibn Culcul (976-1013), Ibn Sina (980-1037), Ibn Baytar (1197-1248), Gafiki (?-1332) are some of the writers of these works.[9,15-17] Dioscorides has a strong influence on Arabic medicine, especially on Ibn Baytar.[18]

Ibn Sina was not a medicine and medical scholar only, but he was a real polymath. He had written also books and chapters about different fields such as philosophy, music, astronomy.[19,20] His interest regarding medicine is not only about or focused on simple drugs; he studied every subject of the field from pathogenesis to preventive medicine, from anatomy to medical treatments.[21-24] He knew scientific literature of his era very well and he always referred most trustable sources. In this context in the simple drugs chapter of his main work, he had chosen *De Materia Medica* as a major reference. Dioscorides' and Ibn Sina's approaches to simple drugs are not same; Dioscorides interested in botanical and pharmacological properties of these drugs, but Ibn Sina focused on their clinical use.[9] The cause of this state is the different point of views of the authors. Ibn Sina is a follower of the theory of humoral pathology, he based diagnosis and treatment issues on the balance of four humors of human body. But Dioscorides rejected this theory and adopted an empirical and sometime experimental approach.

CONCLUSION

As one of the important work of Greco-Roman medicine, *De Materia Medica* has a strong influence on Greco-Arab medicine. This is also confirmed by our study on simple drugs chapter of Ibn Sina's *The Canon of Medicine*. Dioscorides was cited in 87 of 793 substances in this chapter. Most of the information based on Dioscorides is related to herbal drugs and is in the parts that mention their botanical properties. However, some information on the use of some herbal drugs and information on animal and mineral drugs from Dioscorides were also quoted. To fully demonstrate the impact of Dioscorides on Ibn Sina is possible by determining all the parts in which Dioscorides is openly and implicitly addressed throughout *The Canon of Medicine*. In order to achieve this, a multidisciplinary study should be conducted and modern pharmacognosy among these stakeholders is required.

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