

## **The Doctrine of Signatures in the Medieval and Ottoman Levant**

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### **Abstract**

*This study traces the use of the Doctrine of Signatures among medieval and Ottoman physicians and its subsequent appearance in the pharmacological literature of the Levant. Close examination of the historical sources of the Levant seems to support the claim that although this theory did not originate in the region, it was certainly practised there. These sources have revealed 23 substances with medicinal uses based on the Doctrine, bearing witness to the extent of its influence at the time. The main categories of the Doctrine uncovered were: similarity between the substance used and the human organ; resemblance in shape or behaviour to a specific animal; correlation between the colour of a substance and the colour of the symptoms; similarities between the substance and the patient's symptoms and the use of a substance that might produce symptoms of a particular disease in a healthy person to remedy those same symptoms in one who is sick.*

**Key words** : Doctrine of Signatures, Levant, Medieval, Ottoman, Medicinal Substances

### **Résumé**

*Cette étude retrace l'histoire de la Théorie des Signatures parmi les médecins du Moyen Age et chez les Ottomans, ainsi que son développement ultérieur dans la pharmacologie du Levant. Même s'il semble que la Théorie de la Signature ne tire pas son origine au Levant, il est clair qu'elle était appliquée là-bas aussi. Ainsi, recense-t-on 23 substances qui sont autant de preuves de l'application de cette théorie à cette époque et dans un lieu déterminé.*

*Les critères pour la sélection des plantes étaient les similitudes entre la forme et la couleur de la plante d'une part et de l'organe malade d'autre part, la ressemblance de certaines plantes avec un animal particulier, l'aspect de la plante et le perçu du symptôme et la capacité qu'a la plante de reproduire des symptômes identiques à ceux du malade.*

**Mots clés** : théorie des Signatures, Levant, Médiéval, Ottoman, Substances médicinales

### **Introduction**

The Doctrine of Signatures, or the Doctrine of Correspondences, was developed in Europe in the 16<sup>th</sup> and 17<sup>th</sup> centuries. The theory asserts that the way plants (and presumably animals and minerals) look, feel, taste or react

suggests their medicinal application. These special characteristics or 'signatures' serve as God-given indicators or guides to the symptoms and maladies each substance is allegedly capable of curing (1). While the principles of the theory had existed in various cultures since ancient times, it was only in the 16<sup>th</sup> and 17<sup>th</sup> centuries that scholars, philosophers, and physicians began to collect, consolidate, and write down the body of material that comprised the Doctrine.

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## The history of the Doctrine

Throughout history people have used animals, plants, and minerals as medicines. Almost every known culture has employed naturally occurring substances to treat symptoms, ward off diseases, or bring physic to particular body organs. The guiding principle is that the substance used be linked to the ailment by some shared aspect of similarity, usually in terms of colour, shape, behaviour, or appellation. Michel Foucault described it in his *The Order of Things*:

"..there must of course be some mark that will make us aware of these things: otherwise, the secret would remain indefinitely dormant" (2).

Tippo and Stern stated that  
*"In many cases, a firm belief in the goodness of God who put everything on earth for his people gave rise to the Doctrine of Signatures which held that the key to man's use of plants was hidden in the form of the plant itself; one had only to look closely"* (3).

Despite the wide expanse of practices associated with the Doctrine of Signatures since antiquity, scholars have seldom provided a clear explanation of the origins of this pervasive medical philosophy. Some modern academics believe that the early Egyptians derived their medicinal knowledge from these signs (4). Others insist that the Doctrine originated in China and spread throughout Europe during the Middle Ages (5). William Balee suggested that the Doctrine of Signatures is: "universal, since similar patterns of 'resemblance' have been observed in ancient Asia, Classical Greece, medieval Europe, and pre-Columbian America" (6). Tamsyn Barton asserted that: "The idea of 'sympathy'... together with its corollary 'antipathy' was implicit in a wide variety of ancient writer, particularly in the field of medicine. It is related to the idea of correspondence, which designated animals, plants and stones as sympathetic or antipathetic to particular conditions, which might or might not be seen to be caused by the heavenly bodies" (7).

An early example of the application of the theory can be found in the classical treatise *Materia Medica* by the Greek physician Dioscorides (1<sup>st</sup> century CE). Dioscorides describes the plant Aconiton and pays special attention to the shape and uses of its root : 'ye root like to ye tail of a scorpion' (Dioscorides *Nil*). Among its properties we find that 'they say that ye root of this being laid on a scorpion, doth mortify him.... But it kills both Panthers and Soves, and wolves and all beasts, being put into gobbets of flesh'. The use of the root to treat scorpion stings in accordance with the Doctrine of Signatures comes later in the text (8). Evidence for such uses of the Doctrine of Signatures in medieval Europe was studied in the nineteenth century (9) and later in the twentieth century (10).

A number of European scholars were attracted to the Doctrine of Signatures in the 16<sup>th</sup> century. Perhaps the most famous among them was Theophrastus Bombast von Hohenheim (1493-1541), better known as Paracelsus (11). Paracelsus, who served as a professor at Basle University towards the end of his career, published observations on the theory in his book *Supreme Mysteries of Nature* (1656) (12). Walter Pagel, who studied Paracelsus's writing described the Doctrine of Signatures as "A shape of medicine that directs it to the appropriate place of action without any further guide. For nature by virtue of its 'alchemy' has carved out this shape from formless 'prime matter', converting it into 'ultimate' matter endowed with a specific 'form'" (13). The doctrine was also adapted and expanded by Giambattista Porta in his *Phytognomonica*, published in 1588 (14). Their example was followed by Jacob Boehme (1575-1624), a poor shoemaker from Goerlitz, in Germany. At the age of 25 Boehme had a profound mystical vision in which he felt the true relationship between God and man had been revealed to him. As a result of his vision he wrote *Signatua Rerum* (The Signatures of All Things) (15), which was published in the first half of the 17<sup>th</sup> century. Though essentially the book espoused Boehme's

spiritual philosophy of life it was nonetheless soon studied for its medical applications.

In Britain, the Doctrine of Signatures was enthusiastically promoted by William Cole. In his *Art of Simpling* (16), published in London in 1656, Cole wrote: Though sin and Sathan have plunged mankind into an Ocean of Infirmities, yet the mercy of God, Which is over all His works, maketh Grasse to grow upon the Mountaines, and Herbes for the use of men; and hath not only stamped upon them a distinct forme, but also given them particular Signatures, whereby a man may read, even in legible characters, the use of them' (17).

Early writers, such as Porta, believed that the signatures were present in animals as well as in plants. Later scholars confirmed this opinion and further suggested that the physical properties of the substances employed helped to indicate not only the diseases against which they were useful, but also the nature of the powers that effected a cure. Documented research focussing on the history of the theory in medieval Europe was undertaken in the 19<sup>th</sup> century (18) and again in the 20<sup>th</sup> (19). However, evidence of the spread of what was previously supposed to be a Western medical doctrine has only recently been uncovered in places as far afield as present-day Israel (20) and Zimbabwe (21).

The present analysis is an attempt to trace the use of the Doctrine of Signatures in the work of contemporary Levantine physicians and in the pharmacological literature of medieval (22) and Ottoman al-Sham (Levant) (23).

## Sources

Though primarily based on contemporary medical documents (24), this study nevertheless explored a wide range of literature from a variety of historical sources. Among the medicinal uses of the 286 substances found, traces of the influence of the Doctrine of Signatures were clearly revealed (25). These data were carefully

collected and examined, and then the various medical applications of materials were compared to present-day ethnopharmacological usage of many of the same substances in popular medicine in Europe and the Middle East.

The main historical sources employed in the research are presented below in chronological order, with a short biographical description for each to aid the reader to understand the results set out in the tables that follow :

Assaph - [Assaph Harofe] Jewish physician, (about 6-9<sup>th</sup> century CE). His book on medicine (26), contains important medical and pharmacological data.

Ibn Sina - [Abu AN al-Hasayn Abd Allah] Ibn Sina, a Muslim physician (980-1037 CE) (27). He is largely remembered for his book *The Canon* (28).

Maimonides - [Ben-Maimon] Rabbi Moshe Ben-Maimon (1135-1204) was a Jewish physician in Egypt, where he was the Sultan's personal physician (29).

Ibn al-Baytar - [Abu Muhamad Abd Allah Ibn Ahmad] Ibn al-Baytar (d. 1248), Andalusian physician and herbalist, who visited the Near East (30). His main book *The Compendium of Simple Drugs and the Food* (31).

Qazwini - [Zakariya Ibn Muhammad Ibn Mahmud] al-Qazwini (d. 1283) had strong interest in the natural sciences (32). He wrote a book called *The Wonders of Creatures and the Various among Them* (33).

al-'Uthmani - [Shams al-Din] al-'Uthmani, a Muslim judge in the Safed region in the 14<sup>th</sup> century who wrote a description of Safed and the surrounding area (34).

Suriano - Francesco Suriano (1450-1528). An Italian trader from Venice who became a Franciscan monk. His unique knowledge was preserved in his *Treatise on the Holy Land* (35).

Some plants (including *Adiantum capillusveneris* at the left side of the picture) used in the treatment of hair problems because of their similarity to that part of the body, according to the Doctrine of Signatures. Giambattista Porta, *Phytognomonica* (Naples : 1588), p.130



Various *Orchis* sp. (Orchid). Their bulbs were used in the treatment of impotence owing to their similarity to human testicles. Giambattista Porta, *Phytognomonica* (Naples: 1588), p. 142.

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Antaki - [Daud Ibn 'umar] al-Antaki, a Turkish physician from Antioch (d. 1599) (36). Well-known physician and writer of treatises on medicine (37).

Theophrastus - Greek philosopher and scientist (372-288/7 BCE) (39). An early botanist who wrote the famous book *Inquiries into Plants* (40).

Lithagow - William Lithagow was a traveller who visited the East in 1612 (38).

Dioscorides - Pedenius Dioscorides Anazarbeus, a Greek physician and scientist (1<sup>st</sup> century CE) (41). Wrote the famous treatise *Materia Medica* (42).

Three classical writers are also present in the sources. They were chosen because their books were popular in the Middle Ages and often quoted by respected Muslim physicians of the period such as Ibn al-Baytar and Daud al-Antaki :

Galen - Galenos of Pergamum was the most illustrious physician of the ancient world (129-216 CE) (43). For centuries his book on simple drugs served as a textbook for physicians and herbalists (44).

Table 1 - Doctrine of Signatures in Medieval Medicinal Substances of Animal Origin

Common Name	Species	Part Used	Used to treat	Similarity	Selected References
Cuttle Fish	<i>Sepia</i> spp.	Skeleton	Tooth discoloration	Colour – White	Ibn al-Baytar III:147, Qazwini:198.
Coral	<i>Tubipora musica</i>	Body	Haemorrhage	Colour – Red	Ibn al-Baytar I:93-94, Dioscorides V:139, Qazwini:187.
Firefly	<i>Lampyris</i> spp.	Body	Night blindness	Light	Antaki:115.

Table 2 - Doctrine of Signatures in Medieval Medicinal Substances of Plant Origin (45)

Common Name	Species	Part Used	Used to treat	Similarity	Selected References
Common Agrimony	<i>Agrimonia eupatoria</i>	Flowers, Leaf	Hepatitis	Colour- Yellow	Ibn al-Baytar. 111:144-145
Common Balm	<i>Melissa officinalis</i>	Leaf	Heart infirmity	Heart	Ibn Sina:272, Ibn al-Baytar 1:74-75.
Common Snapdragon	<i>Antirrhinum majus</i>	Flowers, Roots, Leaf	Rabies, Snake bites	Dog head, Snake mouth	'Uthmani:(Lewis) 482.
Coral Peony	<i>Paeonia mascula</i>	Roots, Leaf Flowers	Haemorrhages Women's diseases	Colour- Red	Dioscorides 111:157, Antaki:246.
Corn Gromwell	<i>Buglossoides arvensis</i>	Seeds	Urinary obstructions	Stone	Dioscorides 111:158, Antaki:262.
Lebanon Barberry	<i>Berberis cretica</i>	Leaf, Seeds	Hepatitis	Colour- Yellow	Ibn al-Baytar I:55.
Mullein	<i>Verbascum</i> spp.	Roots, Leaf Flowers	Eye disease	Causes Eye Inflammation	Dioscorides IV: 104, Ibn al-Baytar IV: 122.
Orchid	<i>Orchis</i> spp.	Bulbs	Impotence	Testicles	Maimonides:23,24, 26,36, Antaki:141.
Panther Strangler	<i>Doronicum scorpiodes</i>	Roots	Bites and Poisons	Scorpion	Ibn al-Baytar II:90.
Red Horned Popy	<i>Glaucium corniculatum</i>	Flowers, Roots, Leaf	Eye disease, Inflammations	Colour- Red	Dioscorides 111:100, Ibn al-Baytar IV: 124-126.
Rhubarb	<i>Rheum</i> spp.	Roots	Liver, Kidney, Chest and Stomach	Leaf similar to internal organs	Dioscorides III:2, Ibn al-Baytar 11:131.
Rose of Jericho	<i>Anastatica hierochuntica</i>	Plants	Birth infections	Birth process	Ibn al-Baytar IV74
Southern VII:14.1, Maidenhair Fern	<i>Adiantum capillusveneris</i>	Leaf	Hair problems	Hair	Theophrastus Dioscorides IV: 136, Ibn al-Baytar 1:164.
Spiny Broom	<i>Calicotome villosa</i>	Flowers	Hepatitis	Colour- Yellow	Assaph IV396.
Sumach	<i>Rhus coriaha</i>	Fruits	Haemorrhages	Colour - Red	Ibn al-Baytar III:86, Qazwini:255.
Walnut	<i>Juglans regia</i>	Seeds	Brain , cleansing Headaches	Human brain	Antaki:109-110,
Wild Dog Rose	<i>Rosa canina</i>	Fruits	Haemorrhage/ Encouraging Menstruation	Colour - Red	Qazwini:237, Antaki:330.

**Table 3 - Doctrine of Signatures in Medieval Medicinal Substances of Mineral Origin**

Common Name	Species	Part Used	Used to treat	Similarity	Selected References
Hematite	Fe <sub>2</sub> O <sub>3</sub>	Red chalk Powder	Haemorrhage	Colour - Red	Antaki:312.
Jew's Stone	Cidaris spp.	Petrified Body	Urinary obstructions	Stone	Galen IX, 2:5, Ben- Maimon :98, Ibn al-Baytar II:5, Antaki:118.
White Clay		Chalk powder	Breast-feeding problems	Colour - White	Suriano:137, Lithagow:277.

## Results

Substances assembled from the historical survey are listed in tables 1-3. The data on each one include name, parts used in treatment, condition treated, points of similarity, and selected references to physicians who recommended their use (Ancient names of diseases do not necessarily correspond to the pathological entities currently described by the same names).

## Discussion

Analysis of the present survey data reveals a number of trends. Evidence pointing to the use of the Doctrine of Signatures was found in 23 (8.2%) of the medicinal preparations used in the medieval Levant, according to the historical sources consulted: three substances of animal origin out of the 30 present, 17 plant species out of 234, and three mineral preparations out of 15 (46). The presence of similar uses in previous literature (mainly classical sources) exemplify the persistence of the Doctrine of Signatures theory from early times to the present day. The Medieval and Ottoman sources were mainly transmitting the therapeutic knowledge.

Some of the substances, such as Maidenhair, Common Balm, and Orchid, are still used in popular medicine in present-day Israel in ways that are entirely consistent with the Doc-

trine of Signatures (47). Similarly, the present-day uses of a number of other plants employed in traditional medicine elsewhere are also clarified through these findings.

The medicinal applications of these substances can be divided into five 'Signatures' categories, based on our data and the common concepts of the Doctrine of Signatures in the literature (48) :

### A. Similarity between the substance used and the human organ in need of treatment

Some substances certainly fit this category. Orchid bulbs (*Orchis* spp.) were used to treat impotence due to their similarity to human testicles; similar usage is familiar in North Africa today. Rhubarb roots (*Rheum* spp.) were used in several medicinal cultures to treat internal diseases such as spleen and liver disorders, and a variety of kidney, chest, and stomach problems. This application of the plant has also been traced in the traditional medicine of the Yemeni Jews in Israel. It seems to be largely due to the shape of its big leaves, which roughly suggests the internal human organs to be treated. The leaves of the Southern Maidenhair Fern (*Adiantum capillus-veneris*) were used to treat hair problems. It is clear that this was due to the similarity between the fern leaf and human hair. This application of Maidenhair Fern is still known in mo-

dem Israel, North Africa, and in some European countries such as England. Similarly, the leaf of the Common Balm (*Melissa officinalis*) bears a resemblance to the human heart, and this would seem to explain its use as a popular treatment for heart disease. Evidence of comparable treatments has been found in places as far apart as England and India. Rose of Jericho (*Anastatica hierochuntica*) was also used in the medieval Levant, in this case to treat birth infections; its scientific name actually hints at the birth process. This usage can be explained by observance of the phenomenon whereby the dried plant opens out when it encounters water; such medicinal application was still common in the Levant at the beginning of the 20<sup>th</sup> century. Likewise, the shape of the Walnut seed (*Juglans regia*) seems to suggest that of the human brain, and this is surely the reason why the nut was favoured as a treatment for cleaning and curing the brain during the Middle Ages. The use of walnut in line with the Doctrine of Signatures continued as part of traditional medicinal practice in places such as Iraq and Iran right up until the 20<sup>th</sup> century.

#### B. Similarity to animal shape or behaviour

Several examples of this category are found among the substances mentioned in the historical sources. First is the Common Snapdragon (*Antirrhinum majus*). The large flower of the Snapdragon plant was similar, in the view of the medieval physician and his patients, to the head of a dog, a snake's mouth, or the face of some other dangerous creature: therefore it was used to treat snake-bite and rabies. In this case the author, al-Uthmani, gives us a good description of the plant, including its colour (red) and the shape of its flower (dog's head, snake's mouth). The second example is the Panther Strangler (*Doronicum scorpiodes*). The roots of this plant are similar in shape to a scorpion, so since the earliest times they have been used to treat scorpion bites. Similar application of this root could still be observed in Iran and Iraq in the 1940s.

#### C. Similarity between the colour of the substance and the symptomatic colour

This category contains ten substances of plant, animal, and mineral origin. Colour is the main reason for medicinal use here. The examples have been divided into three colour groups.

**Yellow** - Three plants with yellow flowers, bark, or rhizomes were each believed to have special curative power in the treatment of hepatitis. The yellow flowers of the Common Agrimony (*Agrimonia eupatoria*) and the Lebanon Barberry (*Berberis cretica*), both rare in the Levant, were used to treat hepatitis, mirroring similar usage in European popular medicine at the time. The Spiny Broom (*Calicotome villosa*), a common wild plant with shiny yellow blooms, found throughout Israel, has retained the same application in traditional medicine right up to the present.

**Red** - Six substances sharing a connection with this colour, four plants, one mineral, and one animal, were each used in the medieval Levant to treat medical symptoms such as haemorrhaging, eye inflammation, and menstruation. The Coral Peony (*Paeonia mascula*), a rare plant with beautiful red flowers, and the Wild Dog Rose (*Rosa canina*) with its vivid red fruit, were both used in medieval al-Sham to treat conditions with similar symptoms, and are used in the same way in present-day Israel. In the past all parts of the Red Horned Poppy (*Glaucium comiculatum*) were used to cure eye inflammation, and the plant is still employed among the Bedouin tribes in the Negev and Sinai Deserts for this same purpose. The famous Sumach (*Rhus coriaria*), whose red fruits were used both as a spice and a medicine, still appears today in traditional Iraqi remedies, among the Yemeni Jews in Israel, and in the popular medicine of contemporary Europe. Red Chalk (Haematite) was used in the medieval Levant as a special dietary supplement for women who were underweight, as well as in the treatment of haemorrhages. Red Coral (*Tubipora musica*) has been used for the same purpose (to cure haemorrhages) at least since the Roman period, according to Dioscorides, and is still used thus in present-day Israel.

**White** - White Clay is a mineral found mainly in caves. It was used by mothers in the region to improve the quantity and quality of their breast-milk. The highest quality White Clay in the medieval Levant came from a cave in Bethlehem. Western travellers called this clay 'Mary's Milk', and according to contemporary reports, Muslim as well as Christian women used it. The skeleton of the White Cuttle Fish (*Sepia* spp.), on the other hand, served to prevent tooth discoloration and was used to whiten the teeth.

P. Similarities between the substance and observable medical phenomena connected with condition

In this category some unique substances used to treat special medical conditions were found. The Firefly (*Lampyrus* spp.) was used to treat night blindness because of the light generated by its nightly sexual display. The petrified body and spines of the Sea Urchin (*Cidaris* spp.) have been called Jew's Stone since the Roman period and have been used to combat urinary disorders and obstructions in the urinary tract. These remedies have been handed down among Babylonian Jews in Israel from the classical period until the present. The third example is the Corn Gromwell (*Buglossoides arvensis*). Its seeds are similar to stones and therefore they were used to treat urinary obstructions. Similar uses for this plant have been found in the popular medicine of Iraq.

E. The use of a substance (usually in minute dosage) that might produce symptoms of a particular disease in a healthy person to remedy those same symptoms in one who is sick

Different parts of the Mullein (*Verbascum* spp.) cause eye inflammation. This would seem to be the reason why this plant was used in the medieval Levant to treat eye disease.

Other categories, such as plant's names, formed part of the theoretical explanation of and

justification for the physiological action of plants in Middle Ages Europe and, as such, supplemented the Doctrine of Signatures (49). This category was not set since such a case was not found in this research (50).

### Conclusions

The present study provided some evidence of the medical influence of the Doctrine of Signatures in the medieval Levant. The vast majority of historical sources used were necessarily the writings of learned physicians and other educated or important scholars, so their written thoughts and observations could be preserved for posterity in a way that was simply not possible for the oral medical traditions in existence at the time. So this article did not set out to deal with what might be termed 'popular' or 'folk' medicine in the medieval period, but with practices that were then considered standard or orthodox. We may note that one of the most important sources for the use of the Doctrine of Signatures in the medieval Levant, Daud al-Antaki, matches this profile well: he was an educated writer and physician, and a close contemporary of his more famous European colleague Paracelsus. Yet as far as we know no evidence exists to suggest that these two key figures in the history of medicine in the period knew anything about each other. The simultaneous presence of the theory in the treatises of Daud al-Antaki and Paracelsus, shows, that the antiquity of the theory, deeply influenced the cultures where it was diffused.

The medieval and Ottoman physicians of the Middle East seem to have been aware of the connection between the theory and practice of the Doctrine independently of its written expression in the West. They actually practised the 'European' Doctrine of Signatures, or the 'Magia Simpathetica', without having any intimation about the existence of the body of European theory (51).



Finding similar or related medicinal practices and beliefs in extant folk, popular, and traditional medicine at the beginning of the 21<sup>st</sup> century is surprising to say the least. Such traces of the influence of the Doctrine in cultures, countries, and continents as diverse as Israel (52), Iraq, and Iran, and Asia (53), Europe (54), and Africa (55), demonstrate the great power and influence of an effective medical tradition that has stood the test of time, surviving from antiquity into the new millennium.

#### Notes

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23. In this article we treat the medieval era as the period from the Muslim conquest of the Levant (about 640 CE) to the naval exploits of Napoleon Bonaparte in the area (1799).
24. al-Sham is a geographical area covering significant parts of present day Syria, Lebanon, Israel, and Jordan. We regard this region as corresponding closely to the medieval Levant.
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