

Treball final de grau

The situation of the Traditional Medicine in Spain and Jordan and the influence of the Andalusi period

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1. Abstract

Background: Folk medicine comprises the transmission of traditional knowledge over time, across cultures, and historically related territories. This thesis contributes to this knowledge by analyzing data on traditional medicine uses in two countries of the Mediterranean (Jordan and Spain) and on the plant medicine in the book of Ibn al-Baytar *The Compendium of Simple Medicaments and Foods* (13th century CE).

Objectives: This study discusses the prevalence of popular knowledge of folk medicine in Spain and Jordan and the influence of the Andalusí period on them.

Materials and methods: A systematic literature review was conducted to find different ethnobotanical papers of both nations investigating the possible historical connection of the shared uses by the review of Ibn al-Baytar's Compendium.

Results: Ethnobotanical information for 336 species with vast medicinal uses was found. The coincidences in use between both countries were a total of 24 species whom 75% were also found in Ibn al-Baytar's work. Furthermore, Arabic etymological references were found in 6 species out of 24 of Spanish local plants analyzed.

Conclusions: The coincidence of the current ethnobotanical knowledge in the two territories is high. Probably the shared historical background, information flow, and the influence of the historical herbal texts have influenced this coincidence. Moreover, there is a high correlation between Ibn al-Baytar's book and traditional medicine in both countries, 18 species were included in this book and are related to the Andalusí period, indicating the extent legacy of this time. The study confirms that this ancient codex constitutes an important bibliographical source for linking ancient and modern applications of plants.

Resumen

Contexto: La Medicina tradicional comprende la transmisión de conocimiento tradicional a lo largo del tiempo a través de culturas y territorios históricamente relacionados. Este trabajo final de grado contribuye a este campo analizando los usos de la medicina tradicional en dos países mediterráneos (España y Jordania) y la medicina basada en plantas comprendidas en el libro de Ibn al-Baytar *Colección de nombres de alimentos y medicamentos simples* (Siglo 13 d.C.)

Objetivos: Este estudio discute la prevalencia del conocimiento popular en la medicina tradicional española y jordana, y la influencia del periodo andalusí en ellas.

Materiales y métodos: Se ha realizado una revisión bibliográfica para encontrar diferentes artículos etnobotánicos en ambos territorios. Se han investigado las posibles

conexiones históricas acerca de los usos compartidos a través de la revisión del Compendio de Ibn Al-Baytar.

Resultados: Se ha encontrado información etnobotánica de 336 especies con múltiples usos medicinales. Del total, 24 especies comparten los mismos usos en ambos países, y el 75% han sido halladas también en el trabajo de Ibn Al-Baytar. En cuanto a los nombres populares de estas plantas en España, 6 plantas de 24 analizadas provienen del árabe.

Conclusiones: La coincidencia de conocimiento en etnobotánica en ambos países es alta. Probablemente debido al contexto histórico compartido, la transmisión de información y la influencia de textos históricos. Se ha encontrado una alta correlación entre el libro de Ibn Al-Baytar y ambos territorios, 18 especies están incluidas en el Compendio y están relacionadas con este periodo de la medicina islámica, indicando un alto nivel de preservación. El estudio confirma que este antiguo código constituye una fuente bibliográfica importante para establecer puentes entre los usos tradicionales de las plantas y sus usos modernos.

2. Justification of the areas integrated in the project

This thesis has integrated three main areas of study: History of Pharmacy, Pharmaceutical Botany and Pharmacognosy and Phytotherapy.

History of Pharmacy stands out as the main area. History of pharmacy is the science that studies facts and documents through history to understand the present situation of the pharmacy. The Al-Andalus period is a moment in history when a vast amount of advantages, in the field of the pharmacy, were introduced by notable surgeons, physicians and medical scholars such as Ibn-al-Baytar, who left a vast knowledge regarding the uses of plants in the Iberian Peninsula and also in the Middle East. The study of his compendium is the basis on which the traditional medicines of Spain and Jordan are studied to find common points, between the past and the present.

Pharmaceutical Botany is the science that deals with the study of plants, in all their aspects, which includes their description, classification, distribution and identification, and also the study of their reproduction, physiology, and morphology on the environment in which they are found. Through the botanic study of his environment, Ibn-al-Baytar became one of the foremost botanists in the medieval Islamic period, publishing the *Kitab al-jami' li-mufradat al-adwiyah wa'l-aghddhiyah* ('The Compendium

on Simple Drugs and Foods'), collecting the knowledge of centuries of different botanical and medical traditions which influence is being analyzed in this thesis.

Pharmacognosy and Phytotherapy analyze the plant subunits: root, flower, stem, and leaves, related to the study of drugs and medicinal substances of natural, vegetable, microbial origin, fungi or animal. These disciplines study substances with therapeutic properties and other substances of pharmaceutical interest. Nowadays the population knowledge in plant-based medication is decreasing and there is a need to promote well-known plant therapeutic effect to decrease the vast amount of synthetic medication that the population is taking. Knowing the current uses and applications of the plants in different countries we can establish historical bridges between different cultures, which is analyzed in this thesis.

3. Introduction

The East Mediterranean area is characterized by a rich tradition in medicinal treatment by using plants dated from ancient times. Ancient figures as Hippocrates (5th century B.C.), Discords and Galen (1st and 2nd century A.D., respectively) wrote compendiums that survived for centuries and the medical knowledge to develop further. With the rise of Islam, several scholars followed and expanded the Greek tradition adding new data (1).

Many authors including physicians, botanists, geographers, explorers, ethnographers and anthropologists have undertaken the task of compiling and understanding the traditional use of medicinal plants in Europe. (2)

In the Iberian Peninsula the first written documents on traditional knowledge came from historical figures such as Strabo (64 or 63 BCE–c. 24 CE) or Columella (4-c. 70 CE). From 711 to 1492 CE, the Muslims occupied most of the Peninsula naming the territory as “Al-Andalus”. The Muslim empire occupied a variable number of territories of Spain and Portugal, leaving a vast legacy in culture and knowledge. During this period, the Spanish-Muslim agronomists, botanists, and physicians expanded their therapeutic arsenal, developing wide knowledge on medicinal plants and the use of a large number of species. This improvement for medicine was carried out by names such as Ibn Zhur (1094–1162 CE), Averroes (1126–1198 CE), Maimonides (c.1138–1204 CE) or Ibn al-Baytar, object of study of this thesis and his compendium, *Kitab al-Yami' li-mufradat al-adwiya wa-l-aghdiya* or *Compendium of Simple Medicaments and Foods*, one of the most important works from the time (3).

Ibn al-Baytar, is probably the foremost botanist of these age. He studied the works of Discords and Galen as well as those from the main physicians from Persia, eastern Arabia, and Al-Andalus. He focused on botany and pharmacology as the complementary disciplines for medicine. The Compendium is one of the major Arabic works on this collection of botanical and pharmacological books. It is considered a pharmacopoeia.

The Middle East region due to its strategic importance, has been dominated during history by Greeks, Romans, Turks and Mongolians civilizations. These historical events have probably had a great influence on the local cultures including the traditional and folk medicines of the communities in the region. In this territory as well as the rest of the world, plants have been used as a source of medicines from ancient times. In spite

of such a rich cultural heritage and relatively rich flora, the number of scientific ethnobotanical field surveys published in the international journals nowadays is very low (4).

For that reason, this thesis wants to make a contribution in this field, studying the impact of the great Andalusí medicine and middle age period in the Jordanian and Spanish traditional medicines.

The Hashemite Kingdom of Jordan, relevant to this study, since in the Andalusí period, was part of the area well known as *Al Sham* that included Lebanon, Syria, Palestine and Jordan. The kingdom is located in a strategic region with a diverse topographic structure that contributes to the country's richness in natural resources and especially plants (5). Jordan has a respected number of medicinal plant species that comprise 20% of the total flora of the kingdom, due to this fact and the conservative culture, the use of herbal medicine in Jordan is very common nowadays (6). However, the use of medicinal plants in folk medicine nowadays is declining in most parts of the country, and the degradation of medicinal plant species in Jordan is mostly due to grazing, urbanization, construction of roads, forest destruction, and lack of public awareness (7).

On the other hand, within the Iberian Peninsula, through the last century, medicine in the rural communities of Spain was tightly linked to natural resources due to the isolation and the scarcity of health services. At the time when reaching physicians was not as simple as today, knowledge of the natural environment around them was an asset to prevent or cure their afflictions. A great number of studies have been carried out during the last two decades documenting its medical ethnobotany. Spain is a high consumer of medicinal plants and a large amount of the population, compared to other countries, still uses traditional medicine for most common diseases. Despite that in Spain nowadays there is no Traditional Complementary and Alternative Medicine (TCAM) policy, the satisfaction on the use of TCAM is higher compare to other countries (8). The process of oral transmission has broken down and most traditional knowledge is only to be found in the memories of elderly people, and of course, it is being progressively lost as such people pass away (9).

Therefore, studies on ethnobotanical are extremely important to keep the TCAM of different cultures. Knowing the folk medicine of varied regions and their precedence in use can also help us to understand the trends and the main diseases treated trough history and also give us an idea which diseases are more prevalent in a country.

This research aims to collect the traditional medicine knowledge still present nowadays in Spain and Jordan and analyses the influence of Arab medicine through the study of the “*materia medica*” cited in Ibn Al-Baytar Compendium. Since traditional medicine knowledge is deteriorating every day, studies like this thesis are a must to preserve the knowledge and the legacy of different cultures that have been in the peninsula, otherwise this millennial medicine may be lost in the minds of the elderly people.

4. Objectives

The main aim of this study is to analyze the influence of the Andalusí medicine on the actual traditional medicine of Spain and Jordan, through the study of Ibn Al-Baytar’s Compendium.

Other objectives of this study are:

- Analyze and compare the main uses of traditional medicine in both countries.
- Investigate the current situation of the traditional medicine in both countries.
- Study the main plants and families currently used in both countries and their incidence of use.
- Examine the Compendium of Ibn Al-Baytar and find the prevalence of the uses of the plants in the 13th century with the folk medicine of nowadays.
- Compare the local names of the plants in both countries and do an etymologic study of the origin of the names.

5. Material and methods

For the elaboration of this final thesis a deductive and selective bibliographic study was done by a systematic literature review conducted by searching at databases like Scopus, Google Scholar, and Dialnet. In addition, individual search of the references cited by eligible articles was conducted to locate articles that were not generated by the initial database search.

In the identification phase, the following search strategy was conducted in different databases or search engines (Scopus, Dialnet, Google Scholar...) selecting strategic words: (“Traditional medicine” OR “CAM” OR “Medicina tradicional” OR “Phytotherapy” OR “Fitoterapia” OR “Ethnobotany”) AND (“Spain” OR “Jordan” OR “ South Spain” OR “Andalusia” OR “Andalucía” OR “Sur España” OR “España”). The resulting studies were

then screened initially based on their respective titles and abstracts. The common reasons for exclusion were: (i) not relevant for the study (ii) novel uses of a plant (iii) studies focus on other regions not eligible for the study.

After the identification phase, books were consulted to build the theoretical framework. "Compendium of Simple Medicaments and Foods" by Ibn Al-Baytar was the main source to compare the relevant results and analyze the Arab heritage in both countries.

The collection of relevant articles in Jordan was an asset. Many articles were found adjusting in specific regions of the country, which allowed discriminating between some uncommon uses of the plants. Also, multiple articles were found in Spain related to the topic. The focus on the articles about Spanish traditional medicine was the South of the Peninsula, where there is more Arab legacy.

Once the articles were found a comparative study was made about the traditional uses of those plants in each country. When coincidences were found between Jordan and Spain comparisons were made with the book of Ibn Al-Baytar to check if those coincidences were also described in the book from the 13th century. Furthermore, an etymologic study was conducted to know if there was a transition between the Arabic word to the Spanish's common name of the plant.

After analyzing the possible precedence of folk medicine, a comparative study was conducted to analyze the incidence of traditional medicine in both countries, the main uses of the plants and the prevalence nowadays.

6. Results

6.1 Traditional Medicine

Studying plants and try to explain their uses has been one of the main activities of humans since the beginning of the times. Transmission of knowledge regarding plants is an asset for generations to expand their knowledge on how to treat different diseases. The World Health Organization (WHO) defines traditional medicine as the knowledge, skills and practices based on the theories, beliefs, and experiences indigenous to different cultures, used in the maintenance of health and in the prevention, diagnosis, improvement or treatment of physical and mental illness (5).

6.1.1 Traditional Medicine until middle age

Societies during centuries tried to pass the knowledge through generations. The most popular method was the oral transmission. The Mediterranean region has been characterized by a rich knowledge of medicinal treatment used since ancient times. The Greeks elaborated philosophical, medical and pharmaceutical concepts that lasted more than two thousand years in different civilizations: Greece, Rome, Byzantium, the Arab world, Latin Europe and the Renaissance (6).

The Greek Medicine started in the “Age of Pericles” (561-430 A.C.) it was the starting point for compilation and documentation of this herbal medicine on the area (7). Hippocrates was the first physician to establish that diseases were not a divine punishment (8). He’s considered the “father of Medicine” and described the body as a made up of four humors: yellow bile, phlegm, black bile, and blood controlled by the four elements: fire, water, earth and air. The body could be purged of excess by bleeding, cupping, and leeching, medical practices that continued throughout the Middle Ages (5). One of his best works, The Corpus Hippocraticum, is a collection of 53

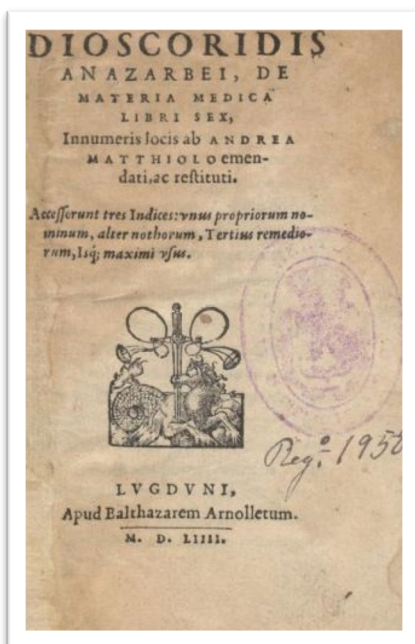


Figure 1. Dioscorides, *De Materia Medica*, book 6 [libri sex], published in Lungudum, 1554.
Source: <https://commons.wikimedia.org/wiki/File:1554Arnoullet.jpg>

books from anatomy to health ethics among others. Between them is found the word “*phármakon*” as a medicament, food and on occasion as a purge. The school of Cos and Cnidus were important Medicine schools, thanks to the persistent work of the pupils, they described around 200 medicinal plants, most of them purges (skirmish, black hellebore), laxative (garlic, leek, onion, cabbage, chard, cucumber) and diuretics (celery, leek, onion, parsley, mint and thyme)(6).

In 65 A.D. Discords, a Greek, wrote his *Materia Medica*, a practical text dealing with the medicinal use of more than 600 plants. Years later Galen synthesized much of what has been attributed to Hippocrates. To further his understanding of bodily functions, he performed animal and even human dissections and was able to demonstrate that the arteries carried blood rather than air.

Galenic theories had great longevity, prevailing in western Europe until the sixteenth century (5).

Thanks to the great advances in medicine by the Ancient Greeks many uses of medicinal plants were documented and transmitted to different civilizations through manuscript translation and synthesis of Greek medical texts into Arabic and Hebrew. The Medicine developed by great figures such as Hippocrates, Aristotle or Galen gave the best tools to Arabic scholars to develop one of the greatest times on history in medicine.

The practice of medicine in the Middle Ages was rooted in the Greek tradition, as it has been said. During the post-classical era, Islamic medicine was the most advanced in the world, integrating concepts of ancient Greek, Roman and Persian medicine as well as the ancient Indian tradition of Ayurveda, while making numerous advances and innovations. Similarities between Syrian Medicine and Ancient Greek Medicine were found in many manuscripts dated on that specific time (7). Pharmacy in the Medieval Islamic World was based on Mediterranean-Mesopotamic theories and local practice, (9).

This knowledge was later adopted in the medieval medicine of Western Europe, after European physicians became familiar with Islamic medical authors during the Renaissance of the 12th century.

The importance of medicinal plants in the Middle Ages cannot be overestimated, Discords texts formed the basis of much of the herbal medicine practiced until 1500. Some plants were used for specific disorders, while others were credited with curing multiple diseases. In many cases, draughts were made up of many different herbs. No monastic garden would have been complete without medicinal plants, and it was to monasteries that the sick went to obtain such herbs. Additionally, people might have gone to the local witch or to the apothecary for healing potions (6).

6.1.2 Traditional Medicine Today

Nowadays as the prevalence of chronic diseases is quickly growing due to lifestyle changes, a rise in the use of different forms of conventional medicines has been reported, notably herbal medicine.

Herbal medicine use was found to be highest amongst people in China (40%), USA (23.6%) and Europe (18.8%). In the Mediterranean area, herbal medicine is being highly used by customers, with different studies describing proportions ranging from 7.6-85.7%. The use of herbal medicine together with conventional medicines is reported in many countries all over the world, although of their progress or economic situation.

According to the WHO report in 2008, 75% of the world's populations are using herbs for the management of basic healthcare needs, with over 60 billion American dollars invested in the trade market of herbal medicine(7).

Margaret Chan (Director of WHO) announced the necessity to view traditional medicine as a precious resource. It needs to be respected and supported as a valuable source of leads for therapeutic advances and the discovery of new classes of drugs (8).

6.1.3 Traditional Medicine in Jordan

Borders in the Middle East have changed throughout history. The Middle East region was ruled by many regimes during the Middle Ages: Umayyad, Abbasid, Fatimid, Ayyubid, Crusader, Mamluk, and Ottoman. Each of these had its own perceptions of borders. A geographical area, including significant parts of present-day Syria, Lebanon, Israel, and Jordan, it was called Bilad al-Sham (The Levant) by the Arabs of the time. This term, with this range of borders, was used in earlier works on the vegetation and the agriculture of the area (9).

The Kingdom of Jordan has been distinguished throughout history by a rich inventory of natural medicinal substances. Among reasons for this, first is the kingdom's location, at



Figure 2. Al-Sham area (Levant). Source: http://www.makehummusnotwar.com/history_6.html

a meeting point of three continents, and its special climate, influenced by the Mediterranean as a moderating factor and the desert as a drying factor. The diverse topographic structure has contributed to the country's richness in natural resources as well.

This territory is situated at a junction of diverse phyto-geographic and zoogeographic zones, where plants and animals originating in differing and contrasting climates come into contact. Another factor is the Rift Valley, particularly the Dead Sea, with its geological

and climatic consequences, which have likewise promoted the richness of the inventory of medicinal substances (10).

The Middle East regions served as the geographic origin of the majority of the medical substances used in the al-Sham region and only few plants were imported in the area during the Middle ages (9). Ibn Al-Baytar was really active in al-Sham during the Andalusi period due to his services to the Ayyubid rulers (11).

Nowadays, many ethnobotanical and ethnopharmacological studies are going on to collect the actual knowledge of the Jordanian populations related with the knowledge of this traditional medicine. It was found that there is a high rate of herbal medicine use in the Northern areas of Jordan with a prevalence of (87.3%)(7). The treatment of Diabetes Mellitus with complementary and alternative medicines (CAM) such as dietary supplements and plant-based medicines is increasingly practiced in the Kingdom (12), through the literature review it was found 25 different species to treat these diseases.

The plants more cited in ethnobotanical studies performed in Jordan are *Olea europaea* L., *Peganum harmala* L. and *Ecballium elaterium* A. Rich. On the other hand, the plants with more therapeutic uses are: *Artemisa judaica*, *Ficus carica*, *Matricaria ourea*, *Acimum basilicum*, *Punica granatum* among others (Annex 1).

Between the young population there is a lack of knowledge of this ancestral medicine and some studies found out that university students take this medication without knowing the actual effects (13).

Furthermore, in the last decade there has been an increasing number of in-vitro and clinical studies suggest the potential role of Middle Eastern herbs in cancer care. The former included plants such as black cumin (*Nigella sativa*), fig (*Ficus carica*), turmeric (*Curcuma longa*), feisty germander (*Teucrium polium*), *Boswellia dioscorides*, *Cyperus rotundus*, and oleander (*Nerium oleander*)(14).

6.1.4 Traditional medicine in Spain

The first plant remains founded in Spanish' archeological sites were cereals that belong to the origin of the domestication and beginning of the agriculture (wheat, barley, oats, and rye). Also, different species with medical attributes have been found in those sites to be used by the population of that time like *Lithospermum officinalis*, *Papaver somniferum*, *Rosmarinus officinalis*, *Malva sylvestris*(15).

To talk about the evolution of the Spanish traditional medicine it is necessary to focus on two historical moments to understand the actual uses of the plants in our Peninsula.

First of all, the ancient Greeks, with the figure of Dioscorides (First century d.C.) who collected 600 medicinal species in his work "*Materia Medica*", this codex perdured for centuries. On the other side, a really important stage in the development of medicine in a world level is the Andalusí period. The Arabs in this period collected the works of the great ancient Greek figures (Hippocrates, Theophrastus, Discords, and Galen) and developed a medicine related to the theology and the philosophy, based in the identification of the symptoms and the development of the pathologies. Al-Andalus was the cradle of great physicians and botanists like Avenzoar, Averroes, Ibn Al-Baitar or Ibn Al-Jatib(15).

After analyzing and selecting recent studies published and related to the Spanish traditional medicine, it was found that the species more cited in the literature are



Figure 3. Spanish local market of herbal medicine. Source: <https://medtempus.com/archives/herbolarios-el-coqueteo-diario-con-la-ilegalidad/>

Foeniculum vulgare, *Hypericum perforatum*, and *Rosmarinus officinalis*.

On the other hand, the plants with more therapeutic uses are *Thymus vulgare*, *Salvia officinalis*, *Rosmarinus officinalis*, *Origanum vulgare*, *Ocimum basilicum*, *Mentha pulegium*, *Marrubium vulgare*, among others. Curiously, the plants found with more therapeutic use among

the traditional knowledge are from the Family Lamiaceae (Annex 1)

In many rural areas in Spain the main source of knowledge of traditional medicine is oral and direct learning within the family, which is a very valuable source of knowledge that should be preserved. This knowledge is highly threatened by the lack of transmission to the younger generations (16)

Nevertheless, the Spanish parliament passed in 2007 the first law addressing Natural Heritage and Biodiversity (Spanish law 42/2007). Article 70 from Section IV "Sustainable use of natural heritage and biodiversity" states that "According to the rules, resolutions and principles of the Agreement on Biological Diversity and of the World Intellectual

Property Organization, Public Administrations will promote the execution of inventories of traditional knowledge relevant to the conservation and sustainable use of biodiversity and geodiversity, with a special emphasis on ethnobotany”(17).

6.2 Medicine in Al-Andalus

The period of Al-Andalus goes from 711 to 1492 CE. During this time the Muslims dominated the area and occupied vast part of the Iberian Peninsula. The Muslims who invaded the peninsula were mainly Syrians from Damascus.

Medicine in Al-Andalus initially was based in the Eastern Islamic (18). Spanish-Muslims physicians, botanist and pharmacist expand their therapeutic knowledge on medicinal plants and documenting a large number of species (3). Great figures that developed vast advances for the medicine were Ibn Azhur (1094-1162 CE), Averroes (1126-1198 CE), Maimonides (1138-1204 CE) and Ibn Al-Baytar, whose compendium is studied in this thesis.

Due to the expansion of the Islam during this period, a large number of new drugs were introduced in their *materia medica* as result of the expansion in the Far East such as China and Borneo. Between these new drugs we find the ambergris, camphor, cassia, cloves, mercury, myrrh, nutmeg, senna, and sandalwood. This last plant gives the name to pharmacist in Arabic “Saidalani”. During this period the Arabs invented the figure of the apothecary and developed the latter introducing new pharmaceutical formulation such as syrups, juleps, alcohol and tragacanth (19).

Avicenna (980-1037 CE) also called “The prince of physicians” collected the doctrine of Galen, Hippocrates and Aristotle and wrote *The canon of Medicine*. Andalusian physicians dealt with the identification and re-evaluation of medicinal substances, such as Ibn Juljul (10th century) and al-Idrīsī, were aware of the absence of many drugs in the Greek medical literature and devoted works to the discussion of such missing drugs. Another important source of knowledge in this time is Ibn Rushd, also known as Averroes (12th ca.). In his major work on medicine, the *al-kulliyāt* (Generalities), written between 1153 and 1169, he devoted a chapter to the drugs not mentioned by Galen. Averroes list consists of forty-one drugs, twenty of which are identical to drugs that feature in Ibn Juljul's and al-Idrīsī's compendiums (20).

During the Middle Ages, Islamic medicine was considered the leading medical scheme involving traditional medical practices in the Middle East, Africa, India, and the far East, along with Greek–Roman-based European pharmacopeia. Scholars such as Ibn Sina and

Maimonides imprinted herbal medicine as the leading medicinal modality at the time (14).

This medical tradition, developed in the 10th century and expanded in the 11th to 12th, reached its peak in the 13th to 16th centuries and later declined during the 17th to 19th centuries (3,21).

6.2.1 Ibn Al-Baytar Compendiums

Abu Muhammad Abdallah Ibn Ahmad Ibn Baitar Dhiya Al-Din Al Malaqi, henceforth known as “Ibn Al-Baytar”, was a physician, pharmacologist, and botanist, apparently born in Benalmadena (Malaga, Spain) in 1197 CE. He was presumably the greatest botanist among the Moors of this age. He learned botany from Abu Al Abbas Al Nabati. He studied the achievements of Discords and Galen as well as those from the main physicians from Persia, eastern Arabia, and Al-Andalus (11).

He focused his studies on botany and pharmacology as the parallel disciplines for medicine. He has also been recognized as the first author to give a written description of distillation and essential oils.

It is considered that in 1219, after his studies, he departed Malaga on a plant-collecting expedition to the Islamic world to collect plants, visiting Bugia, Constantinople, Tunis, Tripoli, Barqa and Adalia. After 1224, he entered the service of Al-Kamil, the Egyptian Governor, and was appointed chief herbalist. In 1227 Al Kamil extended his domination to Damascus, and Ibn Al-Baytar accompanied him there, which provided him an opportunity to collect plants in Syria. His researches on plants extended over a vast area: including Arabia and Palestine, which he either visited or managed to collect plants from stations located there. He died in Damascus in 1248.

Ibn Al-Baitar's major contribution was *Kitab Al Jami fi Al Adwiya Al Mufrada* the **Compendium**, is one of the greatest works in Arabic on this issue. It is rated as a pharmacopeia and it contains 1400 simple medicaments and foods are described and alphabetically listed, mostly medicinal plants, but also animal and mineral derivatives. He included his own observations and also includes about 150 works from previous Arab authors and another 20 from Greek ones. The value of the work is enormous: he



Figure 4. First page of Ibn Al-Baytar' Compendium. Source: https://www.qdl.qa/archive/81055/vd_c_100046596924.0x000001

added 300–400 new simple medicaments to the previous pharmacological works, systematized the discoveries of earlier Arabs and gave plant names in different languages (Arabic, Persian, Indian, Greek, Latin, and Romance languages).

His second monumental compendium *Kitab Al Mlughni fi Al Adwiya Al Mufrada* (The Comprehensive Book of Medicinal and Alimentary Simples) is an encyclopedia of medicine that includes the information of the first compendium but the drugs are listed in accordance with their therapeutic value. Thus, its 20 different chapters deal with the plants bearing significance to diseases of head, ear, eye, etc. (3,11).

6.3 Ethnopharmacology

The Ethnopharmacology tries to study this transmission of knowledge between different cultures and try to establish its precedence and cultural impact in history. Transmission, conversely, loss of knowledge as well as the development of new knowledge are the bases for the ethnopharmacology that contributes to optimize the therapeutic uses of the available resources among populations(3). Population is exposed to herbal medicine and so is essential to identify the risk associated with their use. Therefore traditional medicine based on plants is an important public health issue(22).

The importance of the ethnobotany was declared by The United Nations Educational, Scientific and Cultural Organization (UNESCO) as an intangible cultural heritage. Some authors described this science as “the science of survival”(23). The director of the WHO announced in her speech about traditional medicine that we have three main ills of life in the 21st century: the globalization of unhealthy lifestyles, rapid unplanned urbanization, and demographic ageing. These are global trends with global consequences for health, most notably seen in the universal rise of chronic non-communicable diseases, such as heart disease, cancer, diabetes, and mental disorders. For these diseases and many other conditions, traditional medicine has much to offer in terms of prevention, comfort, compassion, and care (8).

6.3.1 Ethnobotanic study of Spain, Jordan and Ibn Al-baytar

After analyzing multiple articles and books related to traditional medicine in Spain and Jordan, it was found a total of 336 different plants used in both countries to treat vast diseases.

The Annex 1 summarizes the whole compilation made, which is divided by the scientific name of plant, the traditional uses in Spain confronted with the ones in Jordan.

The following plants were studied in extend to find their precedence in use:

- *Allium cepa L.*, commonly called onion, is known in Spain as *cebolla* and the main uses found were: to treat coughing (22,24,25) as a diuretic (24,25), to heal boils or furuncles (24), to treat pancreatic problems, for skin and subcutaneous problems, rheumatism and inflammations, alteration of blood pressure, as a tonic (22), for stomach and intestine problems, to heal wounds and as a antihistaminic (25). In Jordan, locally called Basal (بصل), it was found also to treat several affections: for diabetes, loss of appetite, coughing, liver diseases, prostate, cancer (26), and dental infections (27). Among all these indications, the treatment of cough was found in both places. Ibn Al-Baytar attributes on the page 300 of the book of the compendium that the bulb of the onion (*Basal*) can be also used for the cough (28).
- Garlic, *Allium sativum L.* , called in Spain *Ajo* meanwhile in Jordan is called *Thom* (ثوم) was found to treat cough in both countries (22,27). Among the other uses, it was found particular that in Jordan is also used to treat scorpion bites since is a territory where poisonous scorpions are present (27). Ibn Al-Baytar wrote in the Compendium on page 277, that the cloves of the garlic can be used in excessive to reduce the feeling of sore throat that produces cough (28).
- *Eucalyptus globulus* is being used on both countries as a relaxant. The plant was not found on the book since this specie is originally from Australia and was introduced in Spain and also in Jordan in the 19th century (29).
- The fig tree, *Ficus carica L.* , known in Jordan as *Teen* (تين) and in Spain as *Higuera* is used to treat skin diseases like eczema or dermatitis (30,31). In Jordan is more commonly used in the north of the country since there, the conditions are favorable for the tree to grow. Sap secreted from stems is applied on affected areas directly.
- The Fennel *Foeniculum vulgare Mill.* is a well-known plant used and cultivated all around the world. It has more than 100 different names, in Spain is called *Hinojo*, *linojo*, *fenajo* and *millua*; in Jordan is called Shomar (شمر). Fennel is an ancient seasonal herb. The fennel plant originated in the southern Mediterranean region and through naturalization

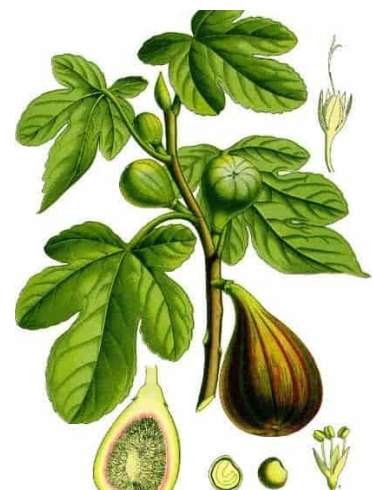


Figure 5. *Ficus carica L.* illustration.
Source :
<https://www.kalliergeia.com/en/ficus-carica-ethnobotanical-and-pharmaceutical-use-of-fig-2nd-part/>

and cultivation it grows wild throughout the Northern, Eastern, and Western hemispheres, specifically in Asia, North America, and Europe (32). Among all its qualities, used as a carminative has been found in both countries (Annex 1).

- Licorice, *Glycyrrhiza glabra L.*, called in Jordan *Erqsoos* (عرق السوس) and *regaliz* in Spain. In the south of Spain is also known as *alcarzuz*, which is an adaptation of the Arabic word. In both countries have been found to be used for cough and constipation. The roots are percolated and then drink (22,33). Ibn Al-Baytar mention that the root can be used for the cough to the shooting property of the plant (page 285) and also for the constipation (28).
- Lemon balm, *Melissa officinalis L.* is used in both countries to treat gynecological disorders (7,22). The name in Arabic for this species is *malleseh* or *turijan* (ميليسا) and in Spain is well known as *melisa* or *toronjil* related with the Arabic word. In the compendium was found with many names such as *turunjân*, *badrendjouya*, *kezouân*, *habaq torondjâny* or *mâlissofulon*. Among the therapeutic effects attributed to the plant in the Andalus period it was found to be used to treat cardiac disorders, diarrhea, constipation, halitosis, liver disease, scabies, dyspnea, epilepsy, cerebral obstruction, depression, and flatulence (28).
- *Lavandula latifolia L.*, this kind of lavender has different therapeutic effects than the normal lavender. The name in Spanish is *alhucema*, similar to the Arabic word used in Jordan *Khozama* (خزامى). Both countries use the plant for stomach disorders and cough (3,26). On the Compendium has been found to be used for a variety of symptoms such as liver disease, stomach disorders, infertility, rhinitis, nervousness and, frailty (28).
- The walnut, *Juglans regia L.*, is well distributed in Europe and Asia. The drupe of this tree is used commonly as an aliment. Is known in Spain as *nogal* and the drupe as *nuez*, meanwhile in Jordan the tree is called *khashaba aljawz* (شجرة الجوز) and the drupe *joz* (جوز). On the side of the traditional medicine, among the different uses, it is used in Jordan and Spain for indigestion. The same use was found on the book of Ibn Al-Baytar, on the page 186. Is explained that the tee of the walnut is drunk for this purpose.
- The flax plant, *Linum usitatissimum L.*, is originally from the West Asia and the Mediterranean area. The seeds, called flaxseed or linen has been used as the source of linen fiber and cultivated since at least 5000 BC (34). Some medical properties are

attributed to this plant specially to treat mild symptoms related with the influenza. In both countries is being used for the cough. In Jordan is called *Kettan* (كتان) and in Spain is known as *lino*. In the Compendium is found with the same name as the one used nowadays in Jordan, and on the page 285 it has been found that the seeds were used as an expectorant (28).

- Mallow, *Malva sylvestris L.*, is an annual plant that is native to Europe, North Africa, and South-west Asia (35). Named in Jordan as *Khoubiza* (خبيزة) is used for stomach problems, skin diseases, and cold related symptoms. These two last therapeutics effects are found in the Spanish traditional medicine. In Spain is called *malva*, but also called *alboheza* in the South of Spain (25,26).



Figure 6. *Malva sylvestris L.* Source: <https://www.pinterest.es/pin/694398836265974384/>

- Mint, *Mentha spicata.*, is been used for decades to extract aromatic essential oil. It is extensively used in flavor and fragrance industries, pharmaceuticals and cosmetic products. Hippocrates and Discords used mint for treatment of different diseases related with stomach-ache (36,37). *Hierba buena*, the common name in Spain, has been found to have several ailments effects such as carminative, cough, anesthetic, and antispasmodic. The antispasmodic therapeutic effect is found on the Compendium of Ibn Al-Baytar and the recommended preparation is to boil and drink the liquid. This characteristic is also found on the Jordanian traditional medicine, where it is called *Na'na'* (نعناع) (3,28,38).
- Basil, *Ocimum basilicum L.*, this annual aromatic plant, native to Southeast Asia, is globally cultivated since the leaves are used in cooking (39). Among all the attributions that the plant owns, is characteristic that in Spain is still being used as a mosquito repellent (40). In Jordan, named *habak* (حبق), and Spain, called *albahaca*, it has been found to be used for cough and also for headache. Its infusion in water is prepared and taken three times per day. According to Ibn Al-Baytar some of the uses of the basil are for the stomach specially used as a stomach relaxant and antiemetic (28). The same use for cough like Jordan and Spain was found on the Compendium, among other uses like burns, diarrhea or cardiac disorders (3).
- The olive tree, *Olea europaea L.*, is widely distributed in the Mediterranean area. The large-scale olive cultivation in Spain began in Roman times (41). The olives are commonly called in Spain *aceitunas* or *olivas*. The Arabic word used in Jordan for

olives is *zaiton* (زيتون). The oil extracted from the fruits of the tree is used for many purposes. In both countries is extensively used for many ailments like skin problems and hypercholesterolemia. One use in common in both countries is for the treatment of hypertension. The black olives in the Compendium are attributed to be used for the relaxation in the episodes of asthma (28).

- Marjoram, *Origanum majorana L.*, is an herbaceous, perennial plant native of Cyprus and the Eastern Mediterranean area. In Spain is called *mejorana* or *mayorana*, used as aromatic plant, mainly comes from cultivation in Egypt, Germany, Poland, etc (42). In the northern part of Jordan is used to treat migraine, as a calmative agent, and for gynecological disorders. Among the different uses in the Spanish traditional medicine, it is found to be used also for gynecological disorders. Ibn Al-Baytar wrote in the compendium that the *Mereddouch* (مردقوش) it can be used for stomach disorders, as diuretic, to treat scarification, respiratory problems, eye disease, migraine, melancholia, headache, flatulence, and drunkenness (28).

- The oregano, *Origanum vulgare L.*, is well known in Jordan as *Za'tar* (زعتر) and mostly used as a condiment for food. Worldwide it is used as spice and in complementary medicine because of their perceived antioxidant and antimicrobial properties (43). In Spain, where it is called *orégano*, the leaves are attributed to be good to treat indigestion, attribute also



Figure 7. Jordanian famous Za'tar. Source: <https://commons.wikimedia.org/wiki/File:Zatar.jpg>

find in the Jordanian traditional medicine (24). During the Andalusí period, the oregano according to Ibn Al-Baytar was used for many purposes such treatment of toothache, stomach disorders, circulatory disorders, gynecological disorders, articular pain, animal bites, cough, eye diseases, flatulence, loss of appetite, purgative, and constipation.

- The common poppy, *Papaver rhoeas L.*, is an annual herb indigenous to Iran. In Persian folk medicine, the plant has been used for treatment of a wide range of ailments including inflammation, diarrhea, sleep disorders, treatment of cough, analgesia and also to reduce the withdrawal signs of opioid addiction (44). In Spain, named *amapola*, has been found to have similarities with the Persian traditional medicine and it is used for the treatment of the cough, same also in Jordan where it is called *Shaka iqal noman* (شقاقق النعمان).

- The Arabic tea, *Paronychia argentea Lam.*, Rijel elhamameh (ريجل الحمامة) common name in Jordan, is a species spontaneously growing in the Mediterranean area. The extracts from its aerial parts have been frequently used in traditional medicine for many purposes such as stomach ulcer, renal stones, and diabetes (45). In Spain, where it is locally named *sanguinaria*, among all its uses, it is used for urinary problems and as a blood depurative, as well as in Jordan (Annex 1).
- Popularly known as rosemary, *Rosmarinus officinalis L.*, it can be found all over the world but is originated from the Mediterranean region. It is used as a spice in cooking, as a natural preservative in the food industry, and as ornamental and medicinal plant (46). Meanwhile in Spain, named *romero*, is used to treat more than 20 different pathologies, especially in the south of Spain where the variety in use is quite notable and has been declared a panacea (3). One common use found in Spain and Jordan, where is called *Hasiban*, it was for the treatment of liver and circulatory problems. In the book of Ibn Al-Baytar is called *Īklīl al-jabal* (عقل الجبل), and it is used for palpitations, liver diseases, spleen diseases, diuretic, menstruation disorders, wounds, asthma, cough, and flatulence.
- *Sambucus nigra L.* has many common names as elder, elderberry, black elder, European elder, European elderberry, and European black elderberry. It grows in a variety of conditions including both wet and dry fertile soils, primarily in sunny locations (47). In Spain is called *saúco* while in Jordan is called *Bailasan* (بيلسان). In Spain, it has been found to be used for more than 10 pathologies while in Jordan only 3 (Annex 1). Both territories share the same use as the one mention in the Compendium of Ibn Al-Baytar, which says that the flowers are boiled and then drunk for the treatment of the cough and as a bronchodilator (28).
- *Silybum marianum (L.) Gaertn.*, known as milk thistle, is widely used nowadays to treat liver diseases due to his flavonolignan complex, silymarin (48). Also, in Jordan and Spain is being used for this purpose, while in Spain more uses have been found (22,38).



Figure 8. Illustration of *Silybum marianum*. Source: https://es.wikipedia.org/wiki/Silybum_marianum

- Felty germander, *Teucrium polium L. T.*, is a perennial shrub, distributed widely in the dry and stony places of the hills and deserts of almost all Mediterranean countries, South Western Asia, Europe, and

North Africa. Traditionally, in the Mediterranean countries, it has been used for various types of pathological conditions, such as gastrointestinal disorders, inflammations, diabetes, and rheumatism (49). These traditional uses have been found in the folk medicine of Jordan and Spain (Annex 1). Ibn Al-Baytar announced in his compendium, found with the name *Ja'da* (جعدة), that the felty germander is used for multiple purposes like: liver diseases, diuretic, anthelmintic, animal bites, memory loss, fever, flatulence, jaundice, and flank pain (28).

- Largeleaf linden, *Tilia platyphyllos L.*, also known as "lime", its flowers are used worldwide as a delicious herbal tea. It has been used in traditional medicine to treat migraine, hysteria, feverish cold, arteriosclerotic hypertension, and nervous tension for a long time (50). European Medicines Agency published the traditional use of *Tilia platyphyllos* as a relief of the symptoms of common cold, chronic cough, and mental stress in various countries (51). This last ailment has been found in the folk medicine of Jordan and Spain (Annex 1). In the compendium has been found with the name *zayzafron* (زيزفون), same as the Jordanian common name. Ibn Al-Baytar gave many attributes to the brewage prepared with the flowers of this tree such as bronchodilator for asthma episodes. Nevertheless, the same therapeutic effect (anti-stress) has been found in the codex (28).
- The common nettle, *Urtica dioica L.*, *Urtica dioica L.* is used for the treatment of various diseases. Due to its remarkable power of healing, this plant has got the place among the top ranked evidence based herbal medicines. This is also revealed that most of the therapeutic properties of this plant are due to the presence of linoleic acid which is major bioactive component of the essential oil (52). In Spain, where is called *ortiga*, has been found more than 10 attributes to the plant while in Jordan (named *Qorraish*) only 3, and all of them related with hair problems. In both territories has been found that the leaves are being used for the alopecia (Annex 1).
- The corn, *Zea mays L.*, is an annual plant was originated in central Mexico about ten thousand years and it was introduced in Europe in the 17th century. The indigenous people of the Caribbean called this plant *mahís*, which means: "what sustains life"(53). Many attributes have been found in both countries related to its traditional uses and in common has been found to be used for urinary tract problems (Annex 1).

7. Discussion

The history of the herbal medicine shows that during the period of Al-Andalus and due to the great efforts of the Andalusí physicians, botanists, and pharmacists, the old traditions were kept and documented for future generations. This period was one of the greatest times in history for the development of the medicine since the knowledge from a huge number of cultures were merged thanks to the Arabic expansion. This shows the importance of mixing cultures and learning from other traditional medicines to expand and develop the actual medicine.

Regarding the comparative study, the number of plants collected through the literature shows a total of 165 different plants used to treat a number of diseases or health problems in Spain. Instead in Jordan, it was collected a total of 209 plants on this purpose.

The coincidences on the uses of the plants between both countries were 24 plants (7.41%) out of 343 in total. The family of plants with more coincidence on the therapeutic use is the Family Lamiaceae. The treatment of the cough is the one with more similarities in both kingdoms. The Table 1 shows the 24 species that have a coincidence in the therapeutic use in both countries. The table is divided in the scientific name, the local name of the plant in each country, the common use and the part of the plant used for this purpose. The *Compendium* of Ibn Al-Baytar was used to check if those traditional uses were present in the Andalusí period (28).

Table 1. Plants with coincidences in use found between Jordan and Spain. Source: Antoni Sánchez Martínez based on Annex 1.

Scientific name (family)	Local name in Jordan	Local name in Spain	Common Use in Jordan/Spain	Source
<i>Allium cepa</i> L. (F. Alliaceae)	<i>Basal</i>	<i>Cebolla</i>	Throat/coughing	Bulbs
<i>Allium sativum</i> L. (F. Alliaceae)	<i>Thom</i>	<i>Ajo</i>	Throat/coughing	Bulbs
<i>Eucalyptus globulus</i> (F. Myrtaceae)	<i>Kina</i>	<i>Eucalipto</i>	Relaxant	Bark, seeds, leaves
<i>Ficus carica</i> L. (F. Moraceae)	<i>Teen</i>	<i>Higuera</i>	Skin diseases	Sap
<i>Foeniculum vulgare</i> Mill. (F. Apiaceae) = <i>F. officinale</i> F. Piperitum	<i>Shomar</i>	<i>Hinojo, linojo, fenojo</i>	Carminative	Seeds and leaves

<i>Glycyrrhiza glabra</i> L. (F. Fabaceae)	<i>E'rk elssos</i>	<i>Regaliz</i>	Cough and constipation	Roots
<i>Juglans regia</i> L. (F. Juglandaceae)	<i>Joz</i>	<i>Nogal/Nuez (fruto)</i>	Indigestion	Fruits
<i>Lavandula latifolia</i> L. (F. Lamiaceae)	<i>Khozama</i>	<i>alhucema/ espliego</i>	Stomach disorders and cough	Whole plant
<i>Linum usitatissimum</i> L (F. Linaceae)	<i>Kettan</i>	<i>Lino</i>	Cough	Seeds
<i>Malva sylvestris</i> L. (F. Malvaceae)	<i>Khoubiza</i>	<i>Malva</i>	Skin diseases and cough	Aerial part
<i>Melissa officinalis</i> L. (F. Labiatae)	<i>Malleseh</i>	<i>Melisa</i>	Gynecological disorders	Leaves
<i>Mentha spicata</i> . L. (F. Lamiaceae)	<i>Na'na'</i>	<i>Hierba Buena/menta</i>	Antispasmodic	Leaves
<i>Ocimum basilicum</i> L. (F. Labiatae / F. Lamiaceae)	<i>Habak</i>	<i>Albahaca</i>	Cough and headache	Leaves
<i>Olea europaea</i> L. (F. Oleaceae)	<i>Zaiton</i>	<i>Olivo/Aceituna</i>	Hypertension	Leaves and fruits
<i>Origanum majorana</i> L. (F. Lamiaceae)	<i>MardaKoush</i>	<i>Mejorana, Mayorana, Orégano</i>	Gynecological disorders	Leaves and flowers
<i>Origanum vulgare</i> L. (F. Labiatae)	<i>Za'tar</i>	<i>Orégano</i>	Indigestion	Leaves and flowers
<i>Papaver rhoeas</i> L. (F. Papaveraceae)	<i>Shaka / Iqal noman</i>	<i>Amapola</i>	Cough	Flowers
<i>Paronychia argentea</i> Lam. (F. Illecebraceae)	<i>Rijel elhamameh</i>	<i>Sanguinaria</i>	Blood depurative/Urinary problems	Aerial part
<i>Rosmarinus officinalis</i> L. (F. Lamiaceae)	<i>Haslban /Azîr</i>	<i>Romero</i>	Liver and circulatory problems	Leaves and stems
<i>Sambucus nigra</i> L. (F. Caprifoliaceae)	<i>Bailasan</i>	<i>Saúco/sabuco</i>	Cough	Flowers
<i>Silybum marianum</i> (L.) Gaertn. (F. Asteraceae)	<i>Shok Aljmal / Khurfaish Aljmal</i>	<i>Cardo mariano</i>	Liver disease	Flowers and seeds
<i>Teucrium polium</i> L. (F. Lamiaceae) = <i>T. Capitatum</i>	<i>Ja'ada / Jeadá</i>	<i>Zamarrilla, Zamarrita, Tomillo blanco</i>	Stomach disorders	Aerial part
<i>Tilia platyphyllos</i> L. (F. Tiliaceae)	<i>Zayzafon</i>	<i>Tila/Tilo</i>	Relaxant	Flowers and leaves

<i>Urtica dioica</i> L. (F. <i>Urticaceae</i>)	<i>Qorrais</i>	<i>Ortiga, ortiga mayor, ortigón</i>	Alopecia	Leaves
<i>Zea mays</i> L. (F. <i>Poaceae</i>)	<i>Thurah</i>	<i>Maíz</i>	Renal Stones	Fibers

After an exhaustive analysis of the Compendium, from the 24 species revised it was found that 75% had the same medical uses in the 13th century, when the book was written. Ibn Al-Baytar studied the main previous Islamic physicians' texts but also the classical Greek ones, it is probable that many of these shared uses come from this period. Ibn Al-Baytar did a huge input to the actual medicine and especially to the alternative and traditional medicine since through the compendium he spread the uses of the plants to vast regions of the Mediterranean area. This study shows that the Arabs during the period of the Al-Andalus developed the pharmacist figure developing new formulations and specially documenting all the advances for future generations. Finding that some uses of the plants (18 species) are still currently being used in the Spanish folk medicine, gives an idea that the impact of the Andalusí period on the peninsula is still in force.

After analyzing the Compendium and once the coincidences were found, an etymologic study was conducted to know if the Spanish common name comes from the Arabic word. From the 18 species found to have Arabic precedence in use, 33% of them still preserve the Arabic etymological root: *Glycyrrhiza glabra* L., *Melissa officinalis* L., *Lavandula latifolia* L., *Malva sylvestris* L., *Ocimum basilicum* L., and *Olea europaea* L. Curiously, most of the Arabic word preserve in the Spanish language kept the article (Al-) on their transition. Licorice is commonly named in Spain as *regaliz* but in the south of Spain is still called *alcarzuz* that comes from the Arabic word *Erqsoos*, the same happens with lavender that in the south of the peninsula still keep the Arabic word (*alhucema/al-khozoma*) and with the mallow (*alboheza/khoubiza*). Other Spanish common names that insinuate the Arabic legacy are the *toronjil* that comes from the Arabic word *tarunjan* or the olive, called in Spain *aceituna* same as the Arabic word *al-zaiton*.

Therefore, considering the high amount of coincidences and the etymologic study, it can be said that the first hypothesis is supported according to the coincidences of the ethnobotanical uses in the two territories. This can be somewhat explained by the shared historical background, probably by recent exchanges and information flow, and by historical plant medicine texts which may have influenced both cultures. Among these uses, 18 were also included in Al-Baytar's Compendium, and therefore nearly

10.9% of the uses can be directly related to the Andalusí medicine in both territories, indicating a high level of preservation and stability in terms of knowledge, plant use, as well as the presumable ancient link of these uses.

The Table 2 shows all the families found on the literature. The family of plants most used for medical purposes were the F. Asteraceae (6.55%), followed by the F. Labiateae (5.65%), F. Rosaceae (5.36%), F. Leguminoseae (4.76%), F. Apiaceae (4.46%), F. Brassicaceae (3.57%), F. Compositae (3.57%), and F. Lamiaceae (3.57%). There was a lot of families that only one specie was found to have a medical or healing effect like F. Theaceae and F. Thymeleaceae F.

Table 2. Main Families. Source: own elaboration based on Annex 1.

Family	nº	%	Family	nº	%	Family	nº	%
F. Asteraceae	22	6.55%	F. Araceae	3	0.89%	F. Juglandaceae	2	0.60%
F. Labiateae	19	5.65%	F. Chenopodiaceae	3	0.89%	F. Linaceae	2	0.60%
F. Rosaceae	18	5.36%	F. Chenopodiaceae	3	0.89%	F. Loranthaceae	2	0.60%
F. Leguminoseae	16	4.76%	F. Cruciferae	3	0.89%	F. Moraceae	2	0.60%
F. Apiaceae	15	4.46%	F. Hyacinthaceae	3	0.89%	F. Moringaceae	2	0.60%
F. Brassicaceae	12	3.57%	F. Lythraceae	3	0.89%	F. Plantaginaceae	2	0.60%
F. Compositae	12	3.57%	F. Myrtaceae	3	0.89%	F. Pteridaceae	2	0.60%
F. Lamiaceae	12	3.57%	F. Palmaceae	3	0.89%	F. Rhamnaceae	2	0.60%
F. Malvaceae	9	2.68%	F. Poaceae	3	0.89%	F. Tamaricaceae	2	0.60%
F. Cistaceae	8	2.38%	F. Polygonaceae	3	0.89%	F. Violaceae	2	0.60%
F. Euphorbiaceae	8	2.38%	F. Primulaceae	3	0.89%	F. Amaryllidaceae	1	0.30%
F. Euphorbiaceae	8	2.38%	F. Ranunculaceae	3	0.89%	F. Apocynaceae	1	0.30%
F. Cucurbitaceae	7	2.08%	F. Rubiaceae	3	0.89%	F. Araliaceae	1	0.30%
F. Fabaceae	7	2.08%	F. Tiliaceae	3	0.89%	F. Aspleniaceae	1	0.30%
F. Rutaceae	7	2.08%	F. Verbanaceae	3	0.89%	F. Burseraceae	1	0.30%
F. Solanaceae	6	1.79%	F. Zingiberaceae	3	0.89%	F. Crussulaceae	1	0.30%
F. Umbelliferae	6	1.79%	F. Asparagaceae	2	0.60%	F. Dioscoreaceae	1	0.30%
F. Boraginaceae	5	1.49%	F. Capparaceae	2	0.60%	F. Gentianaceae	1	0.30%
F. Lilliacae	5	1.49%	F. Caryophyllaceae	2	0.60%	F. Hipocastanaceae	1	0.30%
F. Scrophulariaceae	5	1.49%	F. Clusiaceae	2	0.60%	F. Illecebraceae	1	0.30%
F. Alliaceae	4	1.19%	F. Combretaceae	2	0.60%	F. Lauraceae	1	0.30%
F. Cupressaceae	4	1.19%	F. Cyperaceae	2	0.60%	F. Myristicaceae	1	0.30%
F. Iridaceae	4	1.19%	F. Equisetaceae	2	0.60%	F. Pedaliaceae	1	0.30%
F. Oleaceae	4	1.19%	F. Ericaceae	2	0.60%	F. Smilacaceae	1	0.30%
F. Papaveraceae	4	1.19%	F. Gramineae	2	0.60%	F. Theaceae	1	0.30%
F. Urticaceae	4	1.19%	F. Guttiferae	2	0.60%	F. Thymeleaceae	1	0.30%

Asteraceae is one of the largest plant families with more than 1,600 genera and 23,000 species of herbs, shrubs, and trees distributed throughout the world. They are worldwide distributed and abundant in both tropics and cold arctic or alpine regions. This family is regarded as the most advanced and highly evolved and is considered to occupy the highest position in the plant kingdom. Plants mostly herbaceous annuals, biennials or perennials (54).

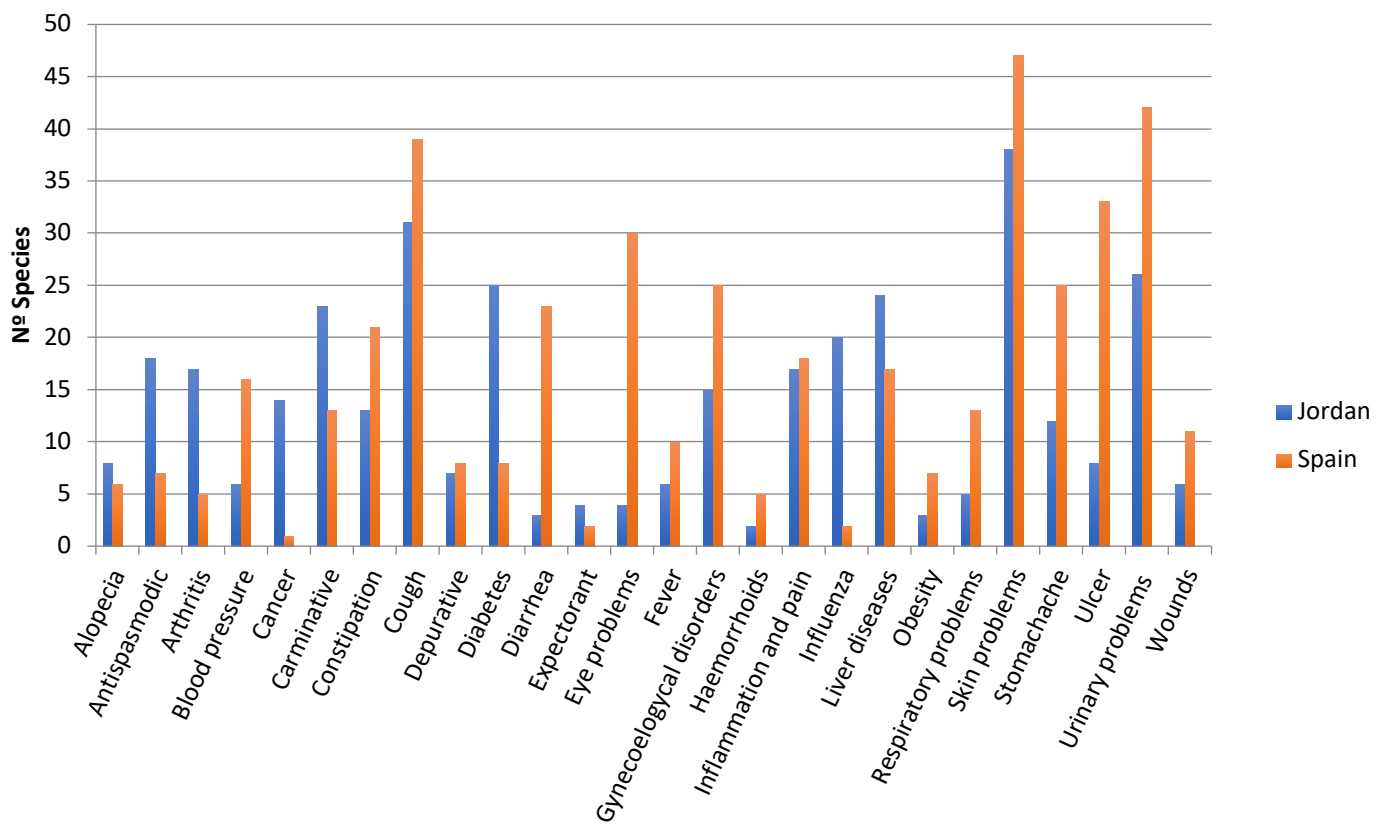
Graph 1 shows the main diseases and problems treated with plants. Many diseases were found on the literature to be cured by traditional medicine. Some plants are used only to treat one disease like *Anchusa officinalis L.*, *Bryonia dioica Jacq* or *Chondrilla juncea L.* among others. On the other hand, most of the plants are used to treat several diseases and some of them even for more than 20 different diseases like *Lavandula latifolia L.*, *Melissa officinalis L.* or *Ocimum basilicum L.* among others.

Skin problems have been found as the main target for this practice in both countries with a prevalence of 28.48% in Spain and 18.18% in Jordan. The treatment of the cough is also a concern for the traditional medicine in both nations with a 14.83% of plants used for this purpose in Jordan and 23.64% in Spain.

In Spain the main purposes for the use of plants were skin problems (28.48%), urinary diseases (25.45%), cough (23.64%), ulcer (20.00%) and eye problems (18.18%). Meanwhile in Jordan there is a great number of plants to treat eye problems (30 species), in Jordan has only been found 4 species.

In Jordan, the main uses of the medical plants founded were similar to the Spanish traditional medicine, giving an idea that the concern of the folk medicine in both territories, although the distance, it is the same. Mild affections are the main target for herbal medicine in both countries, which can be related with the lack of knowledge of the young population related to this topic.

One of the main uses in Jordan that differ from Spain is the high number of plants (25 species) used to treat diabetes while in Spain have been founded only 8 species according to the bibliography searched (Annex 1). Jordan has the highest prevalence of diabetes among the world (55), this affirmation can be related with the quantity of plants used to treat diabetes.



Graph 1. Main treated diseases. Source: own elaboration based on Annex 1.

8. Conclusions

1. Knowing the great advances introduced by the Arabs during the Andalusí period and after analyzing the Compendium of Ibn Al-Baytar, it can be said that, vast of the traditional knowledge about herbal medicine, that is still present in Jordan and Spain, are from this period according to the coincidences found.
2. The main affections treated with traditional medicine in both territories are very similar concluding that herbal medicine is widely used to treat mild symptoms like cough, skin problems, flatulence, and stomachache.
3. The use of traditional medicine in Spain is still low compared to Jordan, where this medicine is more present in the daily day. Although folk medicine is decreasing in both countries due to the lack of transmission of this knowledge between generations, losing valuable heritage for the research and development of new active ingredients.
4. The family with more species used to treat diseases and pathologies in both countries is the Asteraceae due to the easy cultivation and widely distributed around the world. Moreover, the species found with more healing properties were *Lavandula latifolia* L., *Melissa officinalis* L., and *Ocimum basilicum* L.
5. Among 24 species (Table 1) analyzed to discover the influence of the Andalusí period in the traditional medicine in both countries through the Compendium of Ibn Al-Baytar, 18 species are still being used in both territories as the uses described in the codex.
6. A total of 33% of the plants still preserve the Arabic name in Spanish nowadays and endures the Arabic legacy in the peninsula.

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Annex 1. Plant uses in Spain and Jordan. Source: Antoni Sánchez Martínez

#	Scientific Name	Use in Spain	Use in Jordan
1	<i>Alhagi maurorum</i> Medic. (F. Leguminosae)		Urinary tract infections (33)
2	<i>Abelmoschus esculentus</i> Moench (F. Malvaceae) = <i>Hibiscus esculentus</i> L.		Kidney and biliary disorders (26); expectorant, influenza (26,33); abdominal pain, indigestion, constipation (33).
3	<i>Achillea falcata</i> L. (F. Asteraceae)		Fever (26); antispasmodic, carminative, depurative, stomachache (26,27)
4	<i>Achillea santolina</i> L. (F. Asteraceae)		Carminative, depurative, stomachaches, antispasmodic and diabetes (38)
5	<i>Acorus calamus</i> L. (F. Araceae)		Carminative, arthritis (33)
6	<i>Adiantum capillus veneris</i> L. (F. Pteridaceae)	Respiratory problems, fever, stimulant (22)	
7	<i>Aesculus hippocastanum</i> L. (F. Hippocastanaceae)	Urinary problems, gynecological disorders, injury, ulcer, hemorrhoids, hematological agents (22)	
8	<i>Alcea setosa</i> Alef (F. Malvaceae)		Edible (27)
9	<i>Alchemilla vulgaris</i> L. (F. Rosaceae)		Obesity, amnesia (33); diabetes (27)
10	<i>Alhagi maurorum</i> Medik (F. Leguminosae) / <i>A. Mannifera</i>		Kidney and biliary stones (26,38); rheumatism, arthritis and hemorrhoid (26); urinary tract infections (33)
11	<i>Allium cepa</i> L. (F. Alliaceae)	Anticatarrhal/coughing (24,22,25); Diuretic (24,25); boils or furuncles (24) Pancreatic problems, skin and subcutaneous tissues, rheumatism and inflammations, alteration of blood pressure, tonic (22), stomach and intestine problems (22,25), wounds, antihistaminic (25).	Diabetes, loss of appetite, coughing, liver diseases and prostate cancer (26); dental infections (27)
12	<i>Allium roseum</i> L. (F. Alliaceae)	Pancreatic problems, Stimulant (22)	

13	<i>Allium sativum</i> L. (F. Alliaceae)	Chilblains, toothache (24); rheumatism and inflammations, cough, stomach, intestine problems (22); Improve vision (12)	Snake bites and insect stings, asthma (26); blood circulation (26,27) problems and muscle relaxation (26); scorpion bite, whooping cough (27); edible, jaundice (38).
14	<i>Aloe Barbadosis</i> (F. Alliaceae)	Dermatitis, burns, hydrant, psoriasis, antihistaminic, acne, wounds (25)	
15	<i>Aloe vera</i> L. (F. Liliaceae)		Abdominal pain; diabetes; weaning (33)
16	<i>Aloysia citrodora</i> , Ortega ex Pers (F. Verbanaceae)		Calmative, sleeping aid (26); headache (33)
17	<i>Alpinia officinarum</i> Hance (F. Zingiberaceae)		Blood coagulation, flatulence, diabetes, male impotence (33)
18	<i>Althaea officinalis</i> L. (F. Malvaceae)		Emollient (27); common cold, cough, influenza, abdominal pain, constipation, kidney sand and stones (33)
19	<i>Ammi majus</i> L. (F. Apiaceae)		Kidney and biliary stones and asthma (33)
20	<i>Ammi visnaga</i> (L.) Lam. (F. Umbelliferae / F. Apiaceae)		Abdominal pain, kidney sand and stones (33); Diuretic, bladder stones (27).
21	<i>Amygdalus communis</i> L. var <i>amara</i> (F. Rosaceae)		Eczema and dermatological disorders (33)
22	<i>Amygdalus communis</i> L. Var <i>dulcis</i> (F. Rosaceae)		Indigestion, arthritis, cosmetic skin problems (33)
23	<i>Anacyclus pyrethrum</i> Link. (F. Compositae)		Colitis (33)
24	<i>Anchusa aegyptiaca</i> Maly ex Nyman (F. Boraginaceae)		Wounds, skin infections and acne (38).
25	<i>Anchusa officinalis</i> L. (F. Boraginaceae)		Carminative (33)
26	<i>Anchusa strigosa</i> (F. Boraginaceae)		Wounds (27,38); female sterility, anthelmintic, headache (38)
27	<i>Anemone coronaria</i> L. (F. Ranunculaceae)		Hemorrhoid (27)
28	<i>Anethum graveolens</i> L. (F. Umbelliferae)		Flatulence, gall-bladder stones, general weakness (33)
29	<i>Anisum vulgare</i> Gaertn (F. Apiaceae)		Carminative, irritable colon (27)

30	<i>Ankyropetalum gypsophiloides</i> Fenzl (F. Caryophyllaceae)		Female infertility (26,27); Common cold, cough, influenza, cosmetic, skin problems (33)
31	<i>Arbutus andrachne</i> L. (F. Ericaceae)		Laxative (27)
32	<i>Arbutus unedo</i> L. (F. Ericaceae)	Diuretic, rheumatism (24)	
33	<i>Areca catechu</i> L. (F. Palmaceae)		Parasitic worms (33)
34	<i>Artemisia herba-alba</i> Asso (F. Asteraceae) / <i>Artemisia sieberi</i> Bess.		Fever, menstrual and nervous problems (26); antidiabetic, antispasmodic (27,38); expectorant, arthritis (38)
35	<i>Artemisia judaica</i> L. (F. Asteraceae)		Calmative(26,38(56); stomachache(26,56); heart diseases(26,56), sexual weakness(26,56), diabetes (26,38,56); antispasmodic(38); diabetes, gastro-intestinal disorders and external wounding, fungus infection,, atherosclerosis, cancer and arthritis (56)
36	<i>Artemisia monosperma</i> Delile (F. Asteraceae)		Gynecological and birth problems (27)
37	<i>Arum dioscoridis</i> Sibth.and Sm. (F. Araceae)		Cancer, post-delivery pain (38)
38	<i>Arum palaestinum</i> Boiss. (F. Araceae)		Obesity (33); Treatment of cancer, post-delivery pain, inflammation (33,38), internal infections (38)
39	<i>Asparagus acutifolius</i> L. (F. Asparagaceae)	Urinary, skin and Subcutaneous tissues problems, constipation (22)	
40	<i>Asparagus officinalis</i> L. (F. Asparagaceae)		Common cold, cough, influenza (33)
41	<i>Atriplex halimus</i> L. (F. Chenopodiaceae)		Laxative (infants), edible (38)
42	<i>Ballota nigra</i> L. (F. Lamiaceae)	Toothache (27)	
43	<i>Beta vulgaris</i> L. (F. Chenopodiaceae)		Anti-inflammatory (33,27)
44	<i>Borago officinalis</i> L. (F. Boraginaceae)	Expectorant and mucolytic (24)	
45	<i>Brassica nigra</i> L. Koch (F. Cruciferae)		General weakness (33)

46	<i>Brassica oleracea</i> L. (F. Brassicaceae) = <i>Brassica campestris</i> L.		Asthma, cancer, joint inflammation and bacterial infection (33)
47	<i>Brassica oleraceae</i> var. <i>Botrytis</i> (F. Cruciferae)		Gall-bladder stones (33)
48	<i>Bryonia dioica</i> Jacq. (F. Cucurbitaceae)	Injuries (24)	
49	<i>C. Acutifolia</i> Delite. (F. Leguminosae)		Headache, abdominal pain, constipation, flatulence (33)
50	<i>Calamintha incana</i> (Sm.) Heldr. (F. Labiatae)		Abdominal pain, general weakness (33)
51	<i>Calamintha nepeta</i> (L.) Savi (F. Labiatae)	Gynecological disorders, tonic (22)	
52	<i>Calendula arvensis</i> (F. Asteraceae)	Wounds, antihistaminic, menstruation problems, burns, reconstitute, astringent (25).	
53	<i>Calendula officinalis</i> L. (F. Compositae)	Conjunctivitis, irritated eyelids (12)	Anuria, edema, gynecological disorders, male impotence (33)
54	<i>Calligonum comosum</i> L. Hér. (F. Polygonaceae)		Digestive problems (33)
55	<i>Camellia sinensis</i> L. (F. Theaceae)		General weakness (33)
56	<i>Cannabis sativa</i> L. (F. Cannabinaceae)		Anxiety, hyperactivity (33)
57	<i>Capparis cartilaginea</i> Decne. (F. Capparaceae)		Hearing problems, arthritis and rheumatism (27)
58	<i>Capparis spinosa</i> L. (F. Capparaceae) = <i>C. Aegyptiaca</i>		Muscle pain (27,38)
59	<i>Capsella bursa-pastoris</i> L. (F. Brassicaceae)		Diuretic, astringent, hemostatic (27).

60	<i>Capsicum frutescens</i> L. (F. Solanaceae)	Anticatarrhal (24)	Hypertension, indigestion, general weakness (33)
61	<i>Carlina acualis</i> (F. Compositae)		Eczema, dermatological disorders, colitis (33)
62	<i>Carthamus tinctorius</i> L. (F. Asteraceae)		Circulation problems (26); abdominal pain, anuria, gynecological disorders (33)
63	<i>Carum carvi</i> L. (F. Umbelliferae)		Anemia, abdominal pain, flatulence, general weakness (33)
64	<i>Cassia angustifolia</i> Vahl (F. Leguminosae)		Headache, abdominal pain; constipation; flatulence (33)
65	<i>Cassia fistula</i> L. (F. Leguminosae)		Headache, abdominal pain, constipation, flatulence (33)
66	<i>Cassia senna</i> L. (F. Fabaceae) = <i>Cassia obovata</i> , C. <i>Acutifolia</i>		Constipation (26,33,38); weight loss(26,38); cough (26); headache, abdominal pain, flatulence (33)
67	<i>Centaurea aspera</i> L. subsp. <i>Stenophylla</i> (F. Compositae)	Antiseptic, rheumatism, inflammations, tonic, hyperglycaemia, ischocholia (22)	
68	<i>Centaurea iberica</i> Trevir. ex Spreng (F. Asteraceae)		Antispasmodic (27)
69	<i>Centaurea ornata</i> Willd. (F. Asteraceae)	Alopecia, nervousness and insomnia (24)	
70	<i>Cerasus griotta</i> (F. Rosaceae)		Headache, backache, constipation, male impotence (33)
71	<i>Ceratonía siliqua</i> L. (F. Leguminosae / F. Caesalpiniaceae))		Common cold, cough, influenza, indigestion, anxiety, hyperactivity (33); Laxative (33,27); analgesic (27).
72	<i>Ceterach officinarum</i> Willd. (F. Aspleniaceae)	Hypertension (24)	
73	<i>Chamomilla recutita</i> L. Rauschert (F. Asteraceae)	Ocular problems (57)	

74	<i>Chamaemelum nobile</i> (L.) All. (F. Asteraceae)	Laxative, sore throat, sties (24); conjunctivitis (24,57), eyewash, ocular problems, rheum, sties, watery eyes, wounds (57)	
75	<i>Chelidonium majus</i> L. (F. Papaveraceae)	Sore throat, injuries, herpes, warts (24)	
76	<i>Chenopodium ambrosioides</i> L. (F. Chenopodiaceae) = <i>Dysphania ambrosioides</i> (L.) Mosyakin & Clemants		Antispasmodic (38)
77	<i>Chiliadenus saxatilis</i> (Lam.) S. Brullo (F. Compositae)	Antiseptic, sore throat, diarrhea, injury, ulcer, constipation, indigestion (22)	
78	<i>Chondrilla juncea</i> L. (F. Asteraceae)	Hemorrhaging(24)	
79	<i>Chrozophora obliqua</i> Schweinf (F. Euphorbiaceae)		Wound healing (27)
80	<i>Chrysanthemum coronarium</i> L. (F. Asteraceae) = <i>Dendranthema coronarium</i> (L.) M.R.Almeida		Antispasmodic, edible (38)
81	<i>Chrysanthemum vulgare</i> (F. Compositae)		Gynecological disorders (33)
82	<i>Cichorium intybus</i> L. (F. Asteraceae)	Urinary problems, tonic, constipation (22); Conjunctivitis (12)	Edible (38)
83	<i>Cistus albidus</i> L. (F. Cistaceae)	Toothache, cough (22)	
84	<i>Cistus clusii</i> Dunal (F. Cistaceae)	Antiseptic, rheumatism, inflammations, injury, ulcer, cough (22)	
85	<i>Cistus ladanifer</i> L. (F. Cistaceae)	Chilblains (24)	

86	<i>Citrullus colocynthis</i> (L.) Schrad. (F. Cucurbitaceae) = <i>Cucumis colocynthis</i> L.		Liver diseases (26); diabetes (26,33,38); arthritis (2,4); cathartic (27); jaundice (38)
87	<i>Citrullus vulgaris</i> Schrad. (F. Cucurbitaceae)		Urinary and biliary stones (27)
88	<i>Citrus aurantium</i> L. (F. Rutaceae)		Heart problems, gynecological disorders (33)
89	<i>Citrus sinensis</i> L. Osbeck (F. Rutaceae)		Heart problems (33)
90	<i>Citrus x limon</i> (L.) Burm. (F. Rutaceae)	Dysphonia (24)	
91	<i>Clematis campaniflora</i> Brot. (F. Ranunculaceae)	Pneumonia (24)	
92	<i>Cocos nucifera</i> L. (F. Palmaceae)		common cold, cough, influenza, anxiety, hyperactivity (33)
93	<i>Coffea arabica</i> L. (F. Rubiaceae)		Obesity, general weakness (33)
94	<i>Colchicum autumnale</i> L. (F. Liliaceae)		Colitis (33)
95	<i>Commiphora molmol</i> Engl. Ex Tschirchji (F. Burseraceae)		Inflammation and pain (27)
96	<i>Coriandrum sativum</i> L. (F. Apiaceae)		Digestive problems (26,33); weight loss (26); anemia, abdominal pain, indigestion, general weakness (33); nausea, intestinal gases (38)
97	<i>Coridothymus capitatus</i> Rchb.f. (F. Lamiaceae)		Heart and respiratory diseases, diabetes, inflammation (27)
98	<i>Coris monspeliensis</i> L. (F. Primulaceae)	Urinary, throat, injury, ulcer, tonic (22)	

99	<i>Coronilla repanda</i> (Poir.) Guss. subsp. <i>dura</i> (Cav.) Cout (F. Fabaceae)	Cholagogue (24)	
100	<i>Crataegus aronia</i> (F. Rosaceae)		Kidney stone, diuretic and laxative (27); cardiovascular disease, hypertension (38).
101	<i>Crataegus monogyna</i> Jacq. (F. Rosaceae)	Cardiac tonic (24,25); headache, nervousness (24); alteration of blood pressure, anesthetics (22,25); heart problems (22,25); muscle relaxant and liver diseases (25).	
102	<i>Crocus hyemalis</i> Boiss. and Blanche (F. Iridaceae)		Antitussive, asthma (27).
103	<i>Crocus salzmanii</i> Gay (F. Iridaceae)	Gynecological disorders, toothache, indigestion, stimulant (22)	
104	<i>Crocus sativus</i> L. (F. Iridaceae)	Toothache (24)	Male impotence, general weakness (33)
105	<i>Cucurbita maxima</i> Duch. (F. Cucurbitaceae)		Ulcer, diabetes (33)
106	<i>Cucurbita pepo</i> L. (F. Cucurbitaceae)		Anthelmintic (27).
107	<i>Cuminum cyminum</i> L. (F. Apiaceae)		Respiratory problems (26); carminative (1,2); general weakness (33)
108	<i>Cupressus sempervirens</i> L. (F. Cupressaceae)	Urinary problems, gynecological disorders, diarrhea, cough, hemorrhoids (22)	Diabetes (27)
109	<i>Cyclamen persicum</i> (F. Primulaceae)		Hemorrhoids (27)
110	<i>Cydonia vulgaris</i> Pers. (F. Rosaceae)		Cough and bronchitis (27)

111	<i>Cynara cardunculus</i> L. (F. <i>Compositae</i>)	Skin and subcutaneous problems, gynecological disorders, loss of appetite, isocholia, psoriasis, pancreatic problems (22)
112	<i>Cynodon dactylon</i> (L.) Pers. (F. <i>Poaceae</i>)	Diuretic, rheumatism (24); urinary problems (22)
113	<i>Cynoglossum cheirifolium</i> L. (F. <i>Boraginaceae</i>)	Acne, diarrhea, injury, ulcer (22)
114	<i>Cyperus rotundus</i> L. (F. <i>Cyperaceae</i>)	Skin problems (33); hair depilatory (27)
115	<i>Cytisus multiflorus</i> (L'Hér.) Sweet (F. <i>Fabaceae</i>)	Chilblains (24)
116	<i>Cytisus scoparius</i> (L.) Link (F. <i>Fabaceae</i>)	Hemorrhaging (24)
117	<i>Daphne gnidium</i> L. (F. <i>Thymeleaceae</i>)	Skin and subcutaneous problems, cough (22)
118	<i>Daucus carota</i> L (F. <i>Umbellifae</i>)	Urinary problems, skin and subcutaneous problems, loss of appetite, tonic (22)
119	<i>Dictamnus hispanicus</i> Webb ex Willk (F. <i>Rutaceae</i>)	Gynecological disorders, tonic, stomach and intestine problems (22)
120	<i>Digitalis obscura</i> L. (F. <i>Scrophulariaceae</i>)	Urinary problems, bones and joints, injury, ulcer, toothache, heart problems (22)
121	<i>Digitalis thapsi</i> L. (F. <i>Scrophulariaceae</i>)	Boils (or furuncles) (24)
122	<i>Diplotaxis eruroides</i> (F. <i>Brassicaceae</i>)	Anti-inflammatory (27)
123	<i>Dittrichia viscosa</i> (L.) Greuter (F. <i>Compositae</i>)	Diarrhea, injury, ulcer, cough, stomach and intestine problems (22)

124	<i>Dorycnium hirsutum</i> (L.) Ser. (F. Leguminosae)	Urinary problems, anthelmintic, alteration of blood pressure, hemorrhoids (22)	
125	<i>Ecballium elaterium</i> A.Rich. (F. Cucurbitaceae)		Liver diseases (26,38); sinusitis (26,38); jaundice (26,33,27,38)
126	<i>Echium judaeum</i> (F. Boraginaceae)		Anxiety, hyperactivity, general weakness, eczema and dermatological disorders (33)
127	<i>Elatteria cardamomum</i> L. Maton (F. Zingiberaceae)		Hypercholesteremia, carminative, general weakness (33)
128	<i>Equisetum telmateia</i> Ehrh. (F. Equisetaceae)	Urinary problems, bones and joints, hemorrhages, skin and subcutaneous problems (22)	
129	<i>Eriobotrya japonica</i> (Thunb.) Lindl. (F. Rosaceae)		Kidney sand and stones(33); Weight loss (38).
130	<i>Eruca sativa</i> L. (F. Cruciferae)		Blood coagulation, hypercholesteremia (33)
131	<i>Eryngium campestre</i> L. (F. Umbelliferae)	Urinary problems, skin and subcutaneous problems, acne, rheumatism and inflammations, injury, ulcer, toothache, pancreatic problems, hemorrhoids (22)	
132	<i>Eryngium creticum</i> Lam. (F. Apiaceae)		Scorpion and snakes bite (27)
133	<i>Erythrea centaurium</i> (L). Pers (F. Gentianaceae)		Gynecological disorders (33)
134	<i>Eucalyptus globulus</i> (F. Myrtaceae)	Anticatarrhal (24); coughing, mucolytic, antiseptic, digestive, relaxant (25).	Anemia, anxiety, hyperactivity (33)
135	<i>Eugenia caryophyllata</i> Thunb. (F. Myrtaceae)		Hypertension, blood coagulation, flatulence, toothache (33)
136	<i>Euphorbia characias</i> L. (F. Euphorbiaceae)	Warts (24)	
137	<i>Euphorbia helioscopia</i> L. (F. Euphorbiaceae)	Aphrodisiac (24)	Abdominal pain (33)
138	<i>Euphorbia hierosolymitana</i> Boiss (F. Euphorbiaceae) = <i>E. Thamnoides</i>		Purgative, eczema, psoriasis (27); urticarial, warts (38)
139	<i>Euphorbia oxyphylla</i> Boiss. (F. Euphorbiaceae)	Warts (24)	
140	<i>Ferula assa-foetida</i> L. (F. Apiaceae)		Cough and bronchitis (27)
141	<i>Ferula persica</i> Wild (F. Umbelliferae)		Diabetes (33)

142	<i>Ficus carica</i> L. (F. Moraceae)	Anti-haemorrhoidal, anticatarrhal, warts (24); skin and subcutaneous problems, rheumatism, inflammations, injury, ulcer, constipation(22)	Dermatitis, eczema, insect stings, stomach pain, kidney stones, asthma and hypercholesteremia, skin diseases and burn healing(26)
143	<i>Ficus sycomorus</i> L. (F. Moraceae)		Skin diseases and burn healing (26)
144	<i>Foeniculum vulgare</i> Mill. (F. Apiaceae) = <i>F. officinale</i> F. Piperitum	Carminative (24); urinary problems, cough, constipation, indigestion, eye infection(22); digestive(22,25); depurative, diuretic (25); improve vision, tired eyes (12)	Carminative (1,4); irritable colon (26); antispasmodic (26,38)
145	<i>Fraxinus angustifolia</i> Vahl (F. Olaceae)	Rheumatism (24)	
146	<i>Fraxinus excelsior</i> L. (F. Oleaceae)		Diabetes (33)
147	<i>Glaucium corniculatum</i> L. Rudolph (F. Papaveraceae)		Eye inflammation (26)
148	<i>Glycyrrhiza glabra</i> L. (F. Fabaceae)	Cough, constipation (22)	Ulcer, expectorant (26); common cold, cough, influenza, constipation, kidney sand and stones (33)
149	<i>Hedera helix</i> L. (F. Araliaceae)	Calluses (24)	
150	<i>Helianthemum marifolium</i> (F. Cistaceae)	Burns, antiseptic, contusions (10)	
151	<i>Helianthemum oelandicum</i> (F. Cistaceae)	Anti-inflammatory, analgesic (10)	
152	<i>Helianthemum hirtum.</i> (F. Cistaceae)	Burns, respiratory problems (10)	
153	<i>Helianthemum syriacum.</i> (F. Cistaceae)	Digestive, diarrhea, fever (10)	
154	<i>Helianthemum cinereum</i> (Cav.) Pers. (F. Cistaceae)	Gynecological disorders, injury, ulcer, toothache (22); burns, digestive disorders, hemorrhoids, antiseptic, anti-inflammatory (10)	
155	<i>Helichrysum stoechas</i> (L.) Moench (F. Compositae)	Injury, ulcer, stomach, intestine problems, psoriasis (22); ocular problems (12)	
156	<i>Heliotropium europaeum</i> L. (F. Boraginaceae)	Skin and subcutaneous problems, injury, ulcer (22); eyewash (12).	
157	<i>Hibiscus esculentus</i> L. (F. Malvaceae)		Common cold, cough, influenza, abdominal pain, indigestion, constipation (33)
158	<i>Hibiscus sabdariffa</i> L. (F. Malvaceae)		Edible, Blood pressure (26)
159	<i>Hordeum vulgare</i> L. (F. Poaceae) = <i>Hordeum sativum</i>		Kidney sand and stones (26,33)

160	<i>Hyoscyamus aureus</i> L. (F. Solanaceae)		Hallucinogenic (38)
161	<i>Hypericum ericoides</i> L. (F. Guttiferae)	Urinary, Loss of appetite (22)	
162	<i>Hypericum perforatum</i> L. (F. Guttiferae)	Chaps (24); rheumatism, inflammations, cough, ulcer (22); Burns (24,25); constipation, injuries (24,22,25); anti depressive, anti hemoroidal, memory (25). Conjunctivitis (12)	
163	<i>Hypericum trequetrifolium</i> Turra (F. Clusiaceae) = <i>H. crispum</i> L.		Antidepressant(38)
164	<i>Hyssopus officinalis</i> L. (F. Labiatae)		Common cold, cough, influenza (33)
165	<i>Inula viscosa</i> L. (F. Compositae / F. Asteraceae)		Wound treatment (33); skin disease (27); muscle relaxant (38); cancer (8)
166	<i>Jasminum officinale</i> L. (F. Oleaceae)		Anurea, edema (33)
167	<i>Juglans regia</i> L. (F. Juglandaceae)	Antispasmodic, Boils or furuncles (24); urinary problems, skin and subcutaneous problems, gynecological disorders, diarrhea, hyperglycaemia, indigestion (22)	Indigestion (33)
168	<i>Juniperus oxycedrus</i> L. (F. Cupressaceae)	Rheumatism (24,22); urinary problems, acne, anthelminthic, antiseptic, inflammations, cough (22)	
169	<i>Juniperus phoenicea</i> (F. Cupresaceae)	Gynecological disorders, diarrhea, toothache (22)	
170	<i>Lactuca sativa</i> L. (F. Asteraceae)		Alopecia (26,33); dandruff, scull itching, cosmetic, skin problems (33)
171	<i>Laurus nobilis</i> L. (F. Lauraceae)	Antispasmodic, expectorant, mucolytic, emmenagogue (24); respiratory problems, loss of appetite, indigestion, eye heartburn (22); diuretic, heartburn, rheumatism, insect repellent (25).	Skin diseases and cancer (26)
172	<i>Lavandula latifolia</i> L. (F. Lamiaceae)	Blood pressure disorders, varicose veins, cardiac disorders, toothache, , stomach(3); rheumatism, stomach disorders (22,3); contusion, wounds, animal bites, diabetes, hypercholesterolemia, alopecia, eczema, asthma, sore throats, cold/cough, migraine, depression, aphrodisiac, pain, insomnia, frailty, flatulence, loss of appetite, sweat (3)	Stomach disorders and bronchitis (26)

173	<i>Lavandula stoechas</i> L. (F. <i>Lamiaceae</i>)	Circulatory disorders, liver disease, gall-bladder disorders, intestine disorders, gastric ulcer, stomach disorders, dyspepsia, kidney disease, diuretic, rheumatism, sciatica, contusion, wounds, diabetes, hypercholesterolemia, obesity, cough, headache, loss of appetite.(3)	
174	<i>Lavandula pedunculata</i> L. (F. <i>Lamiaceae</i>)	Anticatarrha, dysphonia, Injuries of the foot, chilblains, toothache(24)	
175	<i>Lavatera arborea</i> L. (F. <i>Malvaceae</i>)	Rheumatism, inflammations, injury, ulcer, constipation, cough (22)	
176	<i>Lavendula officinalis</i> Chaix. (F. <i>Labiatae</i>)		Male impotence, anxiety, hyperactivity, general weakness (33)
177	<i>Lawsonia inermis</i> L. (F. <i>Lythraceae</i>)		Hair dying, skin diseases (26); alopecia (26,33); dandruff, scull itching, cosmetic, skin problems (33)
178	<i>Lens culinaris</i> Medikus (F. <i>Leguminosae</i>)		Wounds, warts, alopecia (26)
179	<i>Lepidium latifolium</i> L. (F. <i>Brassicaceae</i>)	Kidney stones (24)	
180	<i>Lepidium sativum</i> L. (F. <i>Brassicaceae</i>)		Digestive problems (26); General weakness (2,4)
181	<i>Leuzea conifera</i> (L.) DC. (F. <i>Compositae</i>)	Rheumatism, inflammations, injury, ulcer, pancreatic problems, hemorrhoids (22)	
182	<i>Linum narbonense</i> L. (F. <i>Linaceae</i>)	Anaesthetics(22)	
183	<i>Linum usitatissimum</i> L (F. <i>Linaceae</i>)	Cough (24)	Common cold, cough, influenza, ulcer, urinary tract infections, eczema, dermatological disorders (33)
184	<i>Lippia triphylla</i> (L'Her) O. Kuntze (F. <i>Verbenaceae</i>)	Urinary problems, respiratory problems, antiseptic, cough, blood pressure, loss of appetite, toothache, hyperglycemia, psoriasis, anesthetics(22); Digestive(22,25); antidiarrheal, heartburn, relaxant (25).	
185	<i>Luffa cylindrica</i> L. (F. <i>Cucurbitaceae</i>)		Cancer (8)
186	<i>Lupinus albus</i> L. (F. <i>Leguminosae</i>)		Diabetes and kidney stones (26)
187	<i>Lythrum salicaria</i> L. (F. <i>Lythraceae</i>)	Antidiarrheal (24)	
188	<i>Majorana syriaca</i> (L.) Raf. (F. <i>Lamiaceae</i>) = <i>Origanum syriacum</i>		Cough, abortive, stomachache, carminative (27,38)
189	<i>Malva nicaeensis</i> All. (F. <i>Malvaceae</i>)	Anticatarrhal(24)	

190	<i>Malva sylvestris</i> L. (F. <i>Malvaceae</i>)	Stomachache, contusions, bruises, nettle stings, boils (or furuncles), fever (24); cough, laxative (24,25); disinfectant, antihistaminic (25).	Coughing, wounds and skin diseases (26); carminative (33).
191	<i>Marrubium vulgare</i> L.(F. <i>Laminaceae</i>)	Injuries (24,3); cough (22,3); respiratory problems, loss of appetite, tonic(22); blood pressure, blood purifier, constipation, toothache, liver disease, intestine disease, stomach disorders, diuretic, menstruation disorders, rheumatism, herpes, brucellosis, infection, diabetes, hypercholesterolemia, hyperuricemia, obesity, abscess, erysipelas, eczema, asthma, cancer, asthenia, colic, fever, nervousness, flatulence, loss of appetite, jaundice, cosmetic (3)	
192	<i>Matricaria aurea</i> Sch.Bip. (F. <i>Asteraceae</i>)= <i>Cotula aurea</i> , <i>Chamomilla aurea</i>		Fever, cough, digestive problems (26,27,38); antispasmodic (27,38), analgesic (27); antiasthma, carminative (27,38); influenza(38)
193	<i>Melilotus indicus</i> (L.) (F. <i>Fabaceae</i>) = <i>Trifolium indicum</i> L.		Appetitive (27)
194	<i>Melissa officinalis</i> L. (F. <i>Labiatae</i>)	Gynecological disorders, skin fungus (22). Digestive, blood depurative, antihistaminic (25). Cardiac disorders, diarrhea, constipation, halitosis, depression, insomnia, anxiety, flatulence, loss of appetite (3)	Abdominal pain, gynecological disorders, arthritis (33)
195	<i>Mentha longifolia</i> Host (F. <i>Laminaceae</i>) = <i>M. Arvensis</i>		Constipation, fever, common cold, general weakness (38)
196	<i>Mentha piperita</i> L. (F. <i>Labiatae</i>)		Common cold, cough, influenza, constipation, male hypersexuality, anxiety, hyperactivity(33)
197	<i>Mentha pulegium</i> L. (F. <i>Laminaceae</i>)	Stomachache, carminative, cough (24,3); blood purifier, circulatory disorders, diarrhea, constipation, toothache, liver disease, pregnancy, kidney disease, gynecological disorders, rheumatism, anthelmintic, diabetes, hypercholesterolemia, obesity, aphrodisiac, headache, loss of appetite (3)	
198	<i>Mentha spicata</i> . L. (F. <i>Lamiaceae</i>)	Skin fungus, anesthetics (25); Circulatory disorders, constipation, stomach disorders, dyspepsia, anthelmintic, burns, diabetes, hypercholesterolemia, cough, aphrodisiac, headache, fever, loss of appetite, antispasmodic (3)	Carminative, antispasmodic, counter irritant (38)

199	<i>Mentha suaveolens</i> L. (F. Lamiaceae)	Cough, enterobiasis (24); indigestion, stomach and intestine problems (22)	
200	<i>Mercurialis annua</i> L. (F. Euphorbiaceae)		Wounds (38)
201	<i>Mercurialis tomentosa</i> L. (F. Euphorbiaceae)	Urinary problems, rheumatism, inflammations, gynecological disorders, ischocholia, constipation (22)	
202	<i>Micromeria myrtifolia</i> Boiss. and Hohen (F. Lamiaceae)		Antispasmodic, female sterility (27)
203	<i>Moringa aptera</i> Gaertn. (F. Moringaceae)		Abdominal pain (33)
204	<i>Myristica fragrans</i> L. Hout. (F. Myristicaceae)		Male impotence, general weakness (33)
205	<i>Narcissus tazetta</i> L. (F. Amaryllidaceae)		Cancer (8)
206	<i>Nasturtium officinale</i> (F. Brassicaceae)		Inflammation, backache, allergy (38)
207	<i>Nerium oleander</i> L. (F. Apocynaceae)		Skin diseases(26); skin disease, toothache (38)
208	<i>Nigella sativa</i> L. (F. Ranunculaceae)		Jaundice, high blood pressure (26); sexual impotence (26,38); arthritis, cough, skin disease, general weakness (38).
209	<i>Ocimum basilicum</i> L. (F. Labiatae / F. Lamiaceae)	Cough, Constipation, Stomach and intestine problems (22); repellent, relaxant (25); Constipation, halitosis, stomach disorders, galactogen, diuretic, rheumatism, helminthic, wounds, animal bites, obesity, alopecia, sore throats, cough, eye disease, aphrodisiac, headache, flatulence, loss of appetite, vomits, antispasmodic (3)	Common cold, cough, influenza; kidney sand and stones; gynecological disorders; alopecia, dandruff, scull itching (33); depression, migraine, cardiac tonic (38)
210	<i>Olea europaea</i> L. (F. Oleaceae)	Hypertension (24,22,25); skin and subcutaneous problems, rheumatism, inflammations, , ischocholia, constipation (22); diuretic, depurative (25); Bloodshot eyes (12)	Cough (26,33);Hypertension (26,27,38); diabetes(26,38), renal stones and muscle contractions (26); hypercholesteremia , hemorrhoids, urinary tract infections (33); laxative (27); muscle stiffness, constipation, toothache (38)
211	<i>Ononis aragonensis</i> Asso (F. Leguminosae)	Urinary (22)	
212	<i>Ononis natrix</i> L. (F. Leguminosae)		Diabetes, intestinal spasm, fever (38)
213	<i>Ononis sicula</i> Desf. (F. Leguminosae)		Cancer (8)
214	<i>Ononis viscosa</i> L. subsp. <i>Breviflora</i> (DC.) Nyman (F. Leguminosae)	Urinary, diarrhea, indigestion (22)	
215	<i>Opuntia ficus-indica</i> (L.) P. Mill. (F. Cactaceae)		Arthritis (38)

216	<i>Opuntia maxima</i> Mill. (F. Cactaceae)	Stomachache, antidiarrheal (24).	
217	<i>Opuntia spp</i> (F. Cactaceae)		Diabetes, blood metabolism (33)
218	<i>Origanum majorana</i> L. (F. Lamiaceae)	Digestive, arterial regulation, diuretic, sedan, gases, otitis (25); gynecological disorders, pain lumbar, allergy, sore throats (3)	Gynecological disorders, migraine, calmative agent (26)
219	<i>Origanum syriacum</i> L. (F. Labiatae)		Blood coagulation, common cold, cough, influenza, abdominal pain, constipation (33)
220	<i>Origanum vulgare</i> L. (F. Labiatae)	Stomach problems, cough , sore throat (24,11); urinary problems, respiratory problems, tonic (22) blood pressure, toothache,, gynecological disorders, burns, poisoning, skin conditions, flu, sore throats, headache, colic, flatulence, loss of appetite(3).	Stomach problems arthritis (33)
221	<i>Paeonia broteri</i> Boiss. & Reut. (F. Paeoniaceae)	Arthritis (24)	
222	<i>Papaver somniferum</i> (F. Papaveraceae)	Insomnia, toothache, relaxant (25)	
223	<i>Papaver rhoeas</i> L. (F. Papaveraceae)	Cough, Nervousness and insomnia (24); urinary, respiratory problems, throat, toothache, anesthetics (22)	Hypertension, numbness of upper and lower limbs, poisoning, snoring, cough (33)
224	<i>Parietaria judaica</i> L. (F. Urticaceae)	Diuretic (24)	
225	<i>Paronychia argentea</i> Lam. (F. Illecebraceae)	Hypertension, blood depurative, hemorrhaging (24); Urinary problems, injury, ulcer, blood pressure (22)	Renal stones (26,33,38); diabetes(26); urinary tract infection (27,38)
226	<i>Peganum harmala</i> L. (F. Zygophyllaceae)		Skin diseases, wounds, lice (26); sexual activities (26,38); hypertension, common cold, cough, influenza, backache, arthritis (33); ease delivery, stomach ache (27).
227	<i>Pelargonium sp. pl.</i> (F. Geraniaceae)	Constipation, breast-feeding babies (24)	
228	<i>Pergularia tomentosa</i> L. (F. Asclepiadaceae) = <i>Daemia tomentosa</i>		Edible, skin infections, urticarial (38)
229	<i>Petroselinum crispum</i> (Mill.) Fuss (F. Apiaceae)	Abortifacant (24); urinary problems, skin and subcutaneous tissues, gynecological disorders, loss of appetite, constipation, anemia (22)	
230	<i>Petroselinum sativum</i> Hoffm. (F. Apiaceae)		Kidney stones (26,38); urinary tract infections(33,38); arthritis (33)

231	<i>Phagnalon rupestre</i> DC. (F. Asteraceae) = <i>Conyza rupestres</i>		Muscle pain (26); skin cauterization (27); inflammation, rheumatism (38); migraine (26,38); depression, scalp infection(38); any disease of unknown reason (26,38)
232	<i>Phillyrea angustifolia</i> L. (F. Oleaceae)	Mouth ulcers (24)	
233	<i>Phlomis lychnitis</i> L. (F. Labiatae)	Urinary problems, diarrhea, injury, ulcer, hemorrhoids (22)	
234	<i>Phoenix dactylifera</i> L. (F. Palmaceae)		Alopecia, dandruff, scull itching (33)
235	<i>Pinus halepensis</i> Mill. (F. Pinaceae)	Respiratory problems, Rheumatism and inflammations (22)	
236	<i>Piper nigrum</i> L. (F. Piperaceae)		Indigestion, anurea, edema, general weakness (33)
237	<i>Pistacia palaestina</i> Boiss (F. Anacardiaceae)		Diabetes, hypertension and antispasmodic (26,27).
238	<i>Plantago lanceolata</i> L. (F. Plantaginaceae)	Stomachache, sore throat, tonsillitis, mouth ulcers, boils (24)	
239	<i>Populus alba</i> L. (F. Rosaceae)	Conjunctivitis (12)	
240	<i>Portulaca oleracea</i> L. (F. Portulacaceae)		Hemorrhoids, gall-bladder stones, inflammation (33)
241	<i>Primula veris</i> L. (F. Primulaceae)		Renal and biliary stones (26)
242	<i>Prunus dulcis</i> (Mill.) D.A. Webb var. <i>amara</i> (L. exC.F. Ludw.) Buch. (F. Rosaceae)	Earache (24) Bones, joints, skin and subcutaneous problems, cough, blood pressure, constipation, psoriasis, anesthetics (22)	
243	<i>Psidium guava</i> L. (F. Myrtaceae)		Common cold, cough, influenza (33)
244	<i>Punica granatum</i> L. (F. Lythraceae)		Heartburns, diarrhea, anthelmintic, wound healing (26); common cold, cough, influenza; ulcer (33); Ulcer, stomachache (26,38); anthelmintic (38)
245	<i>Quercus coccifera</i> L. (F. Fagaceae)		Kidney sand and stone, post delivery syndrome (33); Astringent (mouth gargle), peptic ulcer (27)
246	<i>Quercus faginea</i> Lam.(F. Fagaceae)	Expectorant and mucolytic (24)	
247	<i>Quercus ilex</i> L. subsp. <i>Ballota</i> (Desf.) Samp. (F. Fagaceae)	Hypotension, antidiarrheal, sore throat, chaps (24)	
248	<i>Quercus ilex</i> L. subsp. <i>Rotundifolia</i> (Lam) Schwartz ex T. Morais (F. Fagaceae)	Hemorrhage, cough, diarrhea, injury, ulcer, blood pressure, toothache (22)	
249	<i>Raphanus sativus</i> L. (F. Brassicaceae)		Anemia, female and male infertility, aphrodisiac (26)

250	<i>Retama raetam</i> Webb & Berthel (F. Leguminosae) = <i>Lygos raetam</i> , <i>Genista raetam</i>		Fractures and burns (38)
251	<i>Retama sphaerocarpa</i> (L.) Boiss (F. Leguminosae)	Urinary problems, skin and subcutaneous problems, respiratory problems (22)	
252	<i>Rhamnus alaternus</i> L. (F. Rhamnaceae)	Throat, Alteration of blood pressure, tonic (22)	
253	<i>Rheum officinale</i> Bail. (F. Polygonaceae)		Abdominal pain, jaundice, gynecological disorders, inflammation (33)
254	<i>Rhus coriaria</i> L. (F. Anacardiaceae)		Liver and kidney problems (26); diarrhea (26,33)
255	<i>Rhus tripartita</i> DC. (F. Anacardiaceae)		Teeth and gums problems (26)
256	<i>Ricinus communis</i> L. (F. Euphorbiaceae)		Female contraceptive (26,38)
257	<i>Rorippa nasturtium-aquaticum</i> (L.) Hayek (F. Brassicaceae)	Diuretic (24)	
258	<i>Rosa agrestis</i> Savi (F. Rosaceae)	Urinary problems, rheumatism, inflammations, injury, ulcer, stress, insomnia (22); conjunctivitis, eyewash, ocular problems (12)	
259	<i>Rosa canina</i> L. (F. Rosaceae)	Anticatarrhal, diuretic (24)	Flatulence (33)
260	<i>Rosa damascana</i> Mill. (F. Rosaceae)		Common cold, cough, abdominal pain, gall-bladder stones, general weakness (33)
261	<i>Rosa indica</i> L. (F. Rosaceae)		Common cold, cough, abdominal pain, gall-bladder stones, general weakness (33)
262	<i>Rosa sp. pl.</i> (F. Rosaceae)	Sore throat (24).	
263	<i>Rosmarinus officinalis</i> L. (F. Lamiaceae)	Varicose veins (24,11); contusions and bruises (24,25); Rheumatism, Eczema (24,11), Warts(24), Alopecia (24,11); Urinary problems, Injury and ulcer, tonic, isocholia (22); disinfectant, respiratory problems, bilis secretion, antiseptic (25); Blood pressure disorders, circulatory disorders, diarrhea, toothache, liver disease, intestine disorders, gastric ulcer, stomach disorders, prostatism, kidney disease, diuretic, menstruation disorders, rheumatism, muscle pain, herpes, contusion, wounds, diabetes, hypercholesterolemia, hyperuricemia, skin conditions, asthma, bronchitis, cough, eye disease, migraine, depression, leukemia, asthenia, headache, pain, fever, insomnia, spasms, flatulence, jaundice, cosmetic, dropsy(3)	Kidney and liver diseases, arteriosclerosis (26); anemia (26,38)

264	<i>Rubia peregrina</i> L. (F. Rubiaceae)	Urinary problems, diarrhea (22)	
265	<i>Rubia tinctorum</i> L. (F. Rubiaceae)		Wound and burn healing (26,27); gynecological disorders (33)
266	<i>Rubus ulmifolius</i> Schott (F. Rosaceae)	Hypotension, anticatarrhal, sore throat, mouth ulcer (24); Injury, ulcer, toothache, pancreatic problems, gynecological disorders (22)	
267	<i>Rumex acetosa</i> L. (F. Polygonaceae)		Digestive problems (26)
268	<i>Ruscus aculeatus</i> L. (F. Liliaceae)	Varicose veins, diuretic (24); urinary problems (22)	
269	<i>Ruta angustifolia</i> Pers. (F. Rutaceae)	Rheumatism, inflammations, gynecological disorders (22)	
270	<i>Ruta chalepensis</i> L. (F. Rutaceae) = <i>R. Bracteosa</i>	Antiseptic, intestinal problems, relaxant (25)	Arthritis, back ache, skin diseases, eye and ear infection (26); Sudorific, antispasmodic, diabetes, scorpion bite (27,38)
271	<i>Ruta montana</i> (L.) L. (F. Rutaceae)	Emmenagogue, abortifacient, contusions, bruises, cerebellar ataxia (24)	
272	<i>Salvadora persica</i> L. (F. Salvadoraceae)		Teeth and gum cleansing (26); toothache (33)
273	<i>Salvia officinalis</i> (F. Labiatae)	Cough (25,11), dyspepsia, diarrhea, mouth wounds, disinfectant (25) Varicose veins, blood purifier, circulatory disorders, oral thrush, liver disease, gallbladder disorders, stomach disorders, kidney disease, gynecological disorders, rheumatism, contusion, wounds, alopecia, skin conditions, asthma, sore throats, headache, fever (3); irritated eyes (12)	
274	<i>Salvia blancoana</i> Webb & Heldr. subsp. <i>Mariolensis</i> Figuerola (F. Labiatae)	Urinary problems, cough, gynecological disorders, blood pressure, stomach, intestine problems, skin fungus (22)	
275	<i>Salvia microphylla</i> Humb. & al. (F. Labiatae)	Cough, gynecological disorders, diarrhea, indigestion (22)	
276	<i>Salvia triloba</i> L. (F. Lamiaceae)		Stomachache, carminative, inflammation, diabetes, sexual weakness (26); antispasmodic (27,38); common cold, intestinal gases (38)
277	<i>Salvia verbenaca</i> L. (F. Lamiaceae)	Eye infection (24,22); injury, ulcer, indigestion (22)	
278	<i>Sambucus nigra</i> L. (F. Caprifoliaceae)	Antihaemorrhoidal, diuretic, contusions, bruises (24); Conjunctivitis (24,12); cough, relaxant, laxative, conjunctivitis, disinfectant(25); diuretic(5,25); antineuralgic (25); eyewash, ocular problems, rheum (12)	Common cold, cough, influenza (33)

279	<i>Sanguisorba minor Scop. (F. Rosaceae)</i>	Contusions, bruises, paludism (24)	
280	<i>Santalum album L. (F. Santalaceae)</i>		Cosmetic, skin problems (33)
281	<i>Santolina chamaecyparissus L. subsp. Squarrosa (DC.) Nyman (F. Compositae)</i>	Blood pressure, tonic, indigestion, stomach and intestine problems, fever (22); conjunctivitis, eyewash, ocular problems, sties, tired eyes (22,12)	
282	<i>Sarcopoterium spinosum Spach (F. Rosaceae) = Poterium spinosum</i>		Mouth ulceration, depurative (27); diabetes (27,38); cancer (38)
283	<i>Satureja intricata Lange subsp. Gracilis Rivas Mart. ex G. López (F. Labiatae)</i>	Cough, tonic (22)	
284	<i>Saxifraga longifolia Lapeyr. (F. Saxifragaceae)</i>	Gynecological disorders (22)	
285	<i>Scirpus holoschoenus L. subsp. Holoschoenus (F. Cyperaceae)</i>	Skin and subcutaneous problems (22)	
286	<i>Sedum sediforme (Jacq.) Pau subsp. Sediforme (F. Crassulaceae)</i>	Skin and subcutaneous problems, injury, ulcer, ischocholia, eye heartburn (22)	
287	<i>Sempervivum tectorum L. (F. Crassulaceae)</i>		Ulcer (33)
288	<i>Sesamum indicum L. (F. Pedaliaceae)</i>		Common cold, cough, influenza, general weakness, herpes zoster, alopecia, dandruff, scull itching (33)
289	<i>Sideritis angustifolia Lag. (F. Labiatae)</i>	Urinary problems, injury, ulcer, tonic (22)	
290	<i>Sideritis hirsuta L. (F. Labiatae)</i>	Urinary problems, injury, ulcer, eye infection (22)	
291	<i>Silene vulgaris (Moench) Garcke subsp. Vulgaris (F. Caryophyllaceae)</i>	Loss of appetite, tonic (22)	
292	<i>Silybum marianum (L.) Gaertn. (F. Asteraceae)</i>	Injuries (24); skin and subcutaneous problems, Gynecological disorders, ischocholia, psoriasis, pancreatic problems (22)	Liver disease (38)
293	<i>Sinapis alba L. (F. Brassicaceae)</i>	Antitussive (24)	
294	<i>Sinapis arvensis L. (F. Brassicaceae)</i>		Circulation problems (26).
295	<i>Smilax aspera L. (F. Smilacaceae)</i>		Muscle relaxant (26,27)
296	<i>Solanum luteum Mill (F. Solanaceae)</i>		Toothache (38)
297	<i>Solanum nigrum L. (F. Solanaceae)</i>		Male impotence (33)

298	<i>Stachys heraclea</i> All. (F. Labiatae)	Injury, ulcer, tonic, stomach and intestine problems (22)	
299	<i>Tanacetum parthenium</i> (L.) Schultz Bip. (F. Asteraceae)	Eyewash (12)	
300	<i>Tamarix aphylla</i> (L.) H. Karst (F. Tamaricaceae)		Fever (26)
301	<i>Tamus communis</i> L. (F. Dioscoreaceae)	Injuries (24)	
302	<i>Taraxacum officinale</i> Weber ex F.H.Wigg. (F. Asteraceae)	Warts (24)	
303	<i>Terminalia bellerica</i> Roxb. (F. Combretaceae)		Colitis (33)
304	<i>Terminalia chebula</i> Retz. (F. Combretaceae)		Inflammation (33)
305	<i>Teucrium polium</i> L. (F. Lamiaceae) = <i>T. Capitatum</i>	Blood purifier, circulatory disorders, stomach disorders, diuretic, gynecological disorders, infection, obesity, cough, fever, loss of appetite (3)	Stomach, colic spasm, inflammation, anorexia, jaundice (26). Antispasmodic, carminative, diabetes, kidney stones (27,38)
306	<i>Thuja occidentalis</i> L. (F. Cupressaceae)		Diarrhea, hemorrhoids (33)
307	<i>Thymus mastichina</i> L. (F. Laminaceae)	Cough, sore throat (24)	
308	<i>Thymus piperella</i> L. (F. Lamiaceae)	Respiratory problems, injury, ulcer (22)	
309	<i>Thymus vulgaris</i> L. (F. Lamiaceae)	Urinary problems, respiratory problems, rheumatism, loss of appetite, skin and subcutaneous problems (22,3); inflammations, cough, injury, ulcer, toothache, indigestion(22); digestive, disinfectant, relaxant, bruises, antispasmodic (25); hemorrhoids, circulatory disorders, diarrhea, halitosis, toothache, liver disease, stomach disorders, diuretic, helminthic, pediculosis, whooping cough, wounds, diabetes, hypercholesterolemia, hyperuricemia, obesity, calluses, sore throat, cough, eye disease, pain, nervousness, flatulence, loss of appetite, cosmetic, depurative (3)	

310	<i>Thymus zygis</i> Loefl. Ex L. (F. Lamiaceae)	Anticatarrhal, dysphonia, expectorant and mucolytic, Injuries of the foot (24); hemorrhoids, circulatory disorders, diarrhea, halitosis, toothache, liver disease, stomach disorders, diuretic, rheumatism, helminthic, pediculosis, whooping cough, wounds, diabetes, hypercholesterolemia, hyperuricemia, obesity, calluses, furuncle, eczema, asthma, sore throat, cough, eye disease, pain, nervousness, flatulence, loss of appetite, cosmetic, depurative (3)	
311	<i>Tilia cordata</i> Miller (F. Tiliaceae)		Kidney sand and stones (33)
312	<i>Tilia platyphyllos</i> Scop. (F- Tiliaceae)	Constipation, eye heartburn, anesthetics, stress, insomnia(22)	
313	<i>Tilia platyphyllos</i> L. (F. Tiliaceae)	Constipation, eye heartburn, anesthetics (22); stress (22,25); insomnia (22); antihypertensive, rheumatism, liver (25).	Kidney sand and stones, gynecological disorder, anxiety, hyperactivity, arthritis (33)
314	<i>Trigonella foenum-graecum</i> L. (F. Fabaceae)		Diabetes, sexual weakness, stomach and intestinal pain, skin diseases (26,38)
315	<i>Triticum aestivum</i> L. (F. Gramineae)	Bones and joints, skin and subcutaneous problems, Cough, constipation (22)	Allergy (33)
316	<i>Umbilicus rupestris</i> (Salisb.) Dandy (F. Crussulaceae)	Injuries, burns, acne, warts (24); Urinary problems, injury, ulcer (22); Conjunctivitis (12)	
317	<i>Urginea maritima</i> Baker (F. Hyacinthaceae)	Gynecological disorders(24)	Anti-parasites, jaundice and psoriasis (26)
318	<i>Urginea maritima</i> Baker (F. Hyacinthaceae) = <i>Scilla maritima</i>		Toxic, arthritis (38)
319	<i>Urtica dioica</i> L. (F. Urticaceae)	Blood depurative, stomachache, diarrhea, diuretic, rheumatism, injuries, alopecia, Nervousness (24); repellent, hypertension, deodorant (25); diuretic, blood depurative (24,25)	Alopecia, dandruff, scull itching (33)
320	<i>Urtica pilulifera</i> L. (F. Urticaceae)		Colic spasm, inflammation, liver and circulatory problems (26); cancer (26,38); alopecia, asthma (38)
321	<i>Urtica urens</i> L. (F. Urticaceae)	Blood depurative, contusions and bruises, calcaneal spur, paludism (24); urinary problems, skin and subcutaneous problems, blood pressure, cough, anemia (22)	
322	<i>Varthemia iphionoides</i> L. (F. Labiatae / F. Asteraceae) = <i>Chiliadenus iphionoides</i>		Abdominal pain, diabetes (33); women sterility, female fertilization, eye infection, antispasmodic anti-inflammatory, diabetes, women delivery (38)
323	<i>Veratrum album</i> L. (F.Liliaceae)		Headache (33)

324	<i>Verbascum pulverulentum</i> Vill. (F. Scrophulariaceae)	Antihaemorrhoidal, stomach ache, injuries (22)	
325	<i>Verbascum sinuatum</i> L. (F. Scrophulariaceae)	Respiratory problems, cough, diarrhea, injury, ulcer, hemorrhoids (22); conjunctivitis (12)	
326	<i>Verbascum thapsus</i> L. (F. Scrophulariaceae)	Cough, Boils or furuncles (24)	
327	<i>Veronica</i> sp. (F. Plantaginaceae)	Conjunctivitis and tired eyes (12)	
328	<i>Verbena officinalis</i> L (F. Verbenaceae)	Contusions and bruises (24)	
329	<i>Vicia faba</i> L. (F. Leguminosae)	Urinary problems (22)	
330	<i>Viola odorata</i> L. (F. Violaceae)		Common cold, cough, influenza; anurea, edema, gynecological disorders, cosmetic, skin problems (33)
331	<i>Viscum album</i> L. (F. Loranthaceae)		Hypertension, ulcer (33)
332	<i>Vitis vinifera</i> L. (F. Vitaceae)	Conjunctivitis (24)	General weakness (33)
333	<i>Zea mays</i> L. (F. Poaceae)	Urinary problems, stomach and intestine problems, pancreatic problems, fever, heart problems, hematological agents (22)	Renal stones, blood pressure, prostate cancer, arthritis and weight loss (26).
334	<i>Ziziphus spina-christi</i> (F. Rhamnaceae)		Lipid reduction, cancer, eye inflammation (38)
335	<i>Zizyphus spina.-christi</i> L. Desf. (F. Rhamnaceae)		Abdominal pain; nightmares (33)