

# Licorice from antiquity to the end of the 19th century: Applications in medical therapy

Cristina Fiore<sup>1</sup>, Lorenzo A. Calò<sup>2</sup>, Eugenio Ragazzi<sup>3</sup>, Jens Bielenberg<sup>1</sup>, Decio Armanini<sup>1</sup>

<sup>1</sup>Department of Medical and Surgical Sciences, <sup>2</sup>Clinical and Experimental Medicine, <sup>3</sup>Pharmacology, University of Padua - Italy

## INTRODUCTION

Since the dawn of time man has made use of licorice as a remedy: traditions from different geographical regions and different time periods can attest this (1).

In the East, the first news of pharmacological use of licorice goes back thousands of years before the Christian era in Assyria, but it would appear that many other great civilizations of the past, each in its own way, knew about licorice: for example the Egyptians used it in their cult practices, while the Chinese and the Hindus seem to have appreciated its reinvigorating virtues (2-4).

Back in the West, testimonials are of more recent date. It is currently believed that the Greeks were the first to become aware of the pharmacological properties of licorice: as the name of the plant bears witness (is composed of two Greek terms *glukos*, "sweet", and *riza*, root; this word has, in fact, influenced the name for licorice in many other languages).

From the oldest sources known to us, it seems the Greeks learned about the pharmacological uses of licorice from the Scythians: more precisely, it was mentioned by Theophrastus (IV-III century B.C.), the great botanist, pharmacologist and disciple of Plato and Aristotle (Theophrastus was among the first to study medicinal herbs with exemplary scientific accuracy) (5).

In particular from what Theophrastus states in his treatise of botanical pharmacology, *Enquire into plants*, it would seem that the Scythians were able to survive in the desert for many days without water thanks to the licorice root (5):

"Scythian root (liquorice) is also sweet; some indeed call it simply "sweet root". It is found about Lake Maeotis; it is useful against asthma or dry cough and in general for troubles in the chest; also, administered in honey, for wounds; also it has the property of quenching thirst, if one

holds it in the mouth; wherefore they say that the Scythians, with the help of this and mares milk cheese can go even eleven or twelve days without drinking".

Moreover, it is necessary to emphasize that Theophrastus actively prescribed the root for these various ailments: to treat a non-productive cough, to cure asthma and other respiratory diseases, as well as to combat thirst (5).

In the centuries that followed, the use of licorice for its medicinal purposes is passed down, or consolidated, as we can easily see from the fact that in the first century A.D. Dioscorides, citing Theophrastus, places licorice among the 650 medicinal substances of vegetable origin listed in his *De materia medica* (6). In contrast with Theophrastus, who was a pure botanist, Dioscorides was a pharmacognosist: everything he wrote about plants was dominated by an examination of its therapeutic effects, so much so that in his treatise Dioscorides classified plants according to their nutritional and medicinal properties, and not based on their morphology.

In Rome, during the same century as Dioscorides, Greek knowledge was greatly studied, including the pharmacological virtues of certain plants, and further additions were made to this body of learning. This is also true for licorice, which was investigated, thus broadening knowledge of its properties and increasing the indications for its use.

At the beginning of the Imperial Age, the monumental work *Naturalis Historia* of the eclectic Pliny the Elder (23-79 A.D.) contemplates the licorice plant, giving a detailed description; however, this was likely to have been written without direct knowledge of the plant. In fact, according to Mattioli, a scholar of the works of Dioscorides as well as other authors of antiquity, Pliny committed an error in describing the licorice plant, inserting it among the "thorny" plants, next to

thistle and stinging nettle; this can be explained only by admitting that “Pliny had never seen licorice” (which according to Mattioli, “produces fronds, as Dioscorides says, not in a thorny way, but similar to those of the mastic tree, dense, thick and gummy”) (7).

Be that as it may, the list of properties that Pliny attributes to licorice is highly significant.

In the first place, he proposes licorice as a way of staving off hunger and thirst, and as a remedy for asthma, but, in addition to these traditional claims, he advises its use to combat sterility (8). At this point it is compulsory to point out that this last fact, aside from having important historical interest, is in fact in keeping with the most recent observations concerning the estrogenic effects of certain compounds present in the licorice root.

Here, too, it is worth reading the entire passage, as written by the author himself:

“The root, sweet, is the only part which is used. [...] From it, pessary are prepared, and for that use it is boiled until it has the consistency of honey: sometimes, also, it is crushed, and in this form it is applied to wounds and used to combat malaises of the throat; moreover, for the voice it is very good to use the juice once it has condensed, simply placing it under the tongue; this is also used for the chest and the liver. [...] Chewed, it is also a medicine for the mouth, and can cure ulcerations; often applied in the form of powder, it can cure pterygium. It also cures scabies of the bladder, kidney pain, condyloma, and genital ulcers.” (*Naturalis Historia*, XXII, 11).

Furthermore, along with Pliny, many other authors of ancient Rome wrote about the use of licorice as a pharmacological remedy. Among them, we must limit ourselves to citing only a few.

Another renowned Latin encyclopedist, Aulus Cornelius Celsus (1st century A.D.), in writing about the licorice root, particularly recommended its use to provoke the expulsion of kidney stones (9) (before Galen’s time, Celsus was the most famous medical scholar in ancient Rome).

Scribonius Largus, Roman doctor of the first century A.D., instead indicated that licorice was a valid remedy for problems of the arteries as well as of the voice (10). Even the much-celebrated Galen himself (131-201 A.D.) took into consideration the juice extracted from licorice root. Specifically, to fully understand his description it is worth remembering that he was a proponent of the therapeutic principle *contraria contrariis*, according to which medicines possess different properties (hot-cold, dry-moist), such as to correct the imbalance of the humors considered to be the cause of

disease. Every remedy was distinguished to differing degrees (from 1 to 4) by an elemental quality (hot, cold, dry, moist) and in this resided its ability to restore balance which when disrupted brought about disease. Considering licorice in the context of this theory, it can be placed among the hot and moist remedies (which today we define as “emollients”). Regardless of our ideas about this classification, a particularly eloquent quote on this point comes once again from Mattioli (7).

Among the authors of the late Roman period, Marcellus Empiricus (5th cent. A.D.) deserves a place all to himself in this history of the pharmaceutical properties of licorice. In fact, he suggested the use of licorice to treat many disturbances or pathologies of the lung, stomach, intestine, kidneys and lower back as well as for fever and indigestion (11). Above all, it is worth taking a closer look at this author because of a point which until then had never been mentioned (from what we can discern): he seems to confer special relevance to the presumed diuretic properties of licorice, as it might be possible to gather from his *De medicamentis*, based on a comparative examination of chapter XXVI (where he writes: *urinam efficaciter provocat*) and chapter XXIX (where he states: *movet urinam* – in reference to *Antidotus Cosmiana*, a complex formulation). In this regard, a moment of caution is necessary, since this text is at odds with current knowledge in this field. If, in fact, we look at the mineralocorticoid effect, which has now been completely described thanks to modern research, it is difficult to imagine licorice having a diuretic effect. It becomes more reasonable, therefore, to maintain that the effect described by Marcellus Empiricus is, in reality, due to other plants and herbs that were mixed or taken together with licorice at that time (substances such as horehound, juniper, plantain, in addition to dozens of other mixed species).

Cassius Felix was active at the same time as Marcellus Empiricus (5th cent. A.D.). He prescribed licorice (which he referred to as *gliquiritia*) in cases which today appear very close to our own common usage, which is to say, to combat a dry cough: as long as the herb is mixed with oregano, thyme and hyssop (obtaining a balsamic decoction whose unquestionable curative properties can still be confirmed even today) (12).

Following the classical period, even with the disruptions due to the fall of the Roman Empire in the West, licorice continued to be well known in Europe. Sufficient proof of this is the fact that, at the beginning of the late Middle Ages, Saint Isidore, bishop of Seville (560-636), included the etymology of *Glycyrriza* in his *Etymologiarum sive Originum* (his renowned encyclopedia divided into twenty books in which he pursues, with the objective of formation and spiritual edifica-

tion, an ideal of organic unity of knowledge through the examination of the names of objects, for according to him it is this that would allow us to understand the nature of the objects) (13).

Furthermore, while fully certified by Isidore's *Etymologiarum*, the history of licorice in the Middle Ages still provides no certain references to its cultivation in Western Europe during this time period (however, the same can be said of the preceding era) (14).

Nevertheless, the studies of the properties of licorice continued throughout the late Middle Ages, despite the uncertainty and instability that distinguished society during this period.

Paradoxically, it was actually the complex and often disastrous events of this era that, gave life, slowly but surely, to a movement to salvage and retranslate the writings of the past with the idea of reclaiming them (which at first mainly involved monasteries), and which also permitted the transmission of the wealth of knowledge that had been accumulated concerning licorice.

It is widely recognized that due to its affinity with Greek language and culture (deposited over the centuries: from its status as a Greek colony to its Byzantine domination) it was southern Italy which was first involved in this renaissance.

Here, the School of Salerno (VII-IX century A.D.), which – with its *Regimen sanitatis* – became a lively intermediary for the knowledge of antiquity, carefully examined licorice and its pharmacological properties. In *Tacuinum sanitatis in medicina*, *liquiritia* (as it had become known by that time) is described (plate 76), and various uses are suggested for it: even though it was mostly recommended to combat ailments of the respiratory tract and hoarseness (*confert raucedini vocis et asperitati gutturis*) and as a remedy for kidney obstruction (*provocat urinam, aperit opillationes renum*) (15).

Moreover, following the decline of the Roman Empire in the West, the scientific knowledge of antiquity might have been completely lost, had it not been for the Arab world, which further added to it with great precision (let us not forget that the School of Salerno prided itself on being the center of fusion of Greek-Roman and Arabic cultures in the field of medical studies).

Eloquent testimony of Arab interest in the conservation and spreading of the science of antiquity is the famous *Canone* of Avicenna (980-1037 A.D.), considered an important recapitulation of Medicine of Hippocrates and Galen as well as the philosophy of Aristotle. And even in the *Canone*, licorice has a place: it is cited as a remedy for wounds and ulcers, as well as for diseases of the respiratory tract, the stomach and also of the kidneys and bladder (16).

In the early Middle Ages medical-scientific thought becomes indistinguishable from that which we would

now call “religion”, and thus often the search for eminent personalities in Medicine at that time uncovers (for the most part) the names of Religious People (and often of high order).

It is thus easy to understand how Hildegard von Bingen (1098-1179), prioress of the convent of Rupertsberg bei Bingen (later canonized), is known for, among other things, having written a treatise on medicines inspired in its structure by authors of antiquity, but integrated with knowledge which was fruit of popular experience with herbs. And yet, in this treatise, the Benedictine mystic, among the medicinal herbs, advised the use of licorice (which she called *liquiritium*): reporting that, when taken together with fennel and honey, it could be useful for *de cordis dolore* (with great likelihood: angina pain) (17).

But the Middle Ages were not totally without importance for the history of licorice. To a certain extent they were also a time of great trade: during this period in which the market of spices flourished, first honors went to Venice, which soon became the major port of trade of medicinal herbs for all of Western Europe. At the same time, or nearly, various treatises on the subject began to circulate in large numbers.

This dynamism in commerce and trade might help to explain, at least in part, how at the height of this period, in the 13th century, we can find the earliest cultivation of medicinal plants, among which for the first time there is mention of the cultivation of licorice, already widespread on the Italian peninsula as Pietro Crescenio of Bologna (1230-1321) attests. In the rest of Europe, within a century or two the cultivation of licorice can be considered common: the first cultivation of licorice in Germany of which we can be certain is at Bamberg and dates to the 15th cent. (18), while, in England, it seems to have already been cultivated extensively in the 16th cent. (14).

With the expansion of cultivation of the licorice plant in the West, knowledge of its pharmacological properties and merits grows, due also to a continuous increase in written sources.

Thus, to cite an example, a new indication for the therapeutic use of licorice comes from an unusual work of Jacopo Filippo (1390-1400), Paduan friar and author of *El libro agregà de Serapion*, a translation into Paduan dialect of the work by the Cordovan Arab Serapion the Younger. Here, after a description of the plant according to Dioscorides, the author, as opposed to previous sources, specifies that the main property (“virtue”) of licorice is “*fredda de puocha frigidità e humida temperamente*”, (cool and moist in temperament) while he repeats the indications of efficacy in cases of respiratory diseases and problems of the kidney and bladder (19).

Between the end of the fifteenth century and the beginning of the sixteenth, thanks mostly to the then

recent geographical discoveries and to the invention of the printing press, Botany as a science was born and even licorice was categorized according to taxonomic classifications that the scholars of the time were rapidly developing.

The first attempt at creating a botanical nomenclature came from Leonard Fuchs (1501-1566) who, concerning licorice, accurately describes and characterizes the plant, and reports its scientific name to be the German term *Süßholz* ("sweet root"), which is still in use today (20).

Next came Castore Durante (1529-1590), doctor to Popes Gregory XIII and Sixtus V and an important name among botanists. This author, with his *Herbario nuovo* (1585), intent on spreading medical knowledge that had been passed down through the centuries until the end of the sixteenth century and based on the so-called use of simple medicinals (this was the name given to substances derived from plants, animals or minerals that were used for medical purposes when used alone, not mixed with other substances). The work of Durante, who in his frontispiece proudly declares himself to be *Doctor & Roman citizen*, reunites more than 900 species, ordered alphabetically according to common name, after which follow the Greek and Latin names with further references to Arabic, French, Spanish and German. The morphologic descriptions, while limited to the ideas of the fifteen hundreds, attempt to furnish all the elements necessary to recognize the species. The reason for this meticulous detail can be found in the importance of medicinal plants: herbariums constituted fundamental texts for the medical and apothecary professions, and herbs had to be unmistakably distinguished from one another; the treatise also had to clearly explain the applications and uses, often misunderstood or object of speculation and fantasy. As for licorice (here called *Regolizia*), aside from listing its morphologic characteristics and indicating the areas where it grows, Durante reports various qualities and virtues, particularly underlining how it is of benefit in cases of *scabies* of the bladder and kidney pain, as well as to cure ulcers of the bladder and kidney (21).

This took place prior to the great classification by the Swedish naturalist Carl von Linné (1707-1778). Linné, in fact, proceeded to subdivide plants into genus and species, adopting a nomenclature with two names. Within the genus *Glycyrrhiza* that he coined, he identified three different species: *G. glabra*, *G. echinata* and *G. hirsuta*. This subdivision also offers an occasion to justify the error committed by Pliny as hypothesized by Mattioli: perhaps the species of licorice which the learned Roman considered in his writings, and which he referred to as "thorny", was not *G. glabra*, but rather *G. hirsuta* or *G. echinata* (species which are either hairy or overtly thorny) (22, 23).

Before Linné, the famous English doctor Nicholas Culpeper (1616-1654), in his work "*Complete Herbal*" (1653), while speaking about licorice states "*the best that is grows in England*"; additionally "*it is hot and moist in temperament, helps the roughness of the windpipe, hoarseness, diseases in the kidneys and bladder, and ulcers in the bladder, it concocts raw humors in the stomach, helps difficulty of breathing, is profitable for all salt humors, the root, dried and beaten into powder, and the powder put into the eye, is a special remedy for a pin and web*". The author also repeats in his treatise "*It is also good in all pains of the reins, the strangury, and heat of urine*" (24).

In the century that ensued, the Neapolitan doctor, chemist and philosopher Giuseppe Donzelli describes *licorice*, referring to it here by its modern name, explaining its etymology as "sweet root" and citing several areas of Germany where it is largely cultivated, listing the characteristic properties, which at the time were well known, and suggests the use of its juice for problems of the bladder and kidney pains (25).

As an ideal closing point for our discussion which has nearly reached the age of the industrial development, (and with that, our own times), we can examine the Pharmaceutical Code established by the Republic of Venice, only a few years prior to its decline (1790). It is an emblematic seal on the long and fascinating history which we have tried to review here: in fact, in this Code, licorice is described as being among the various ingredients used to make the "marvelous" preparation known as "teriaca", an ancient and glorious remedy considered a panacea for any pathology (26).

Address for correspondence:  
Cristina Fiore, M.D.  
Department of Medical and Surgical Sciences  
Endocrinology  
University of Padua  
Via Ospedale, 105  
35128 Padua  
Italy  
cristina.fiore@unipd.it

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