

Plant Series, No. 4. Manuscript MS408. Portfolio 3, Right (JPEG 007). Gerard E. Cheshire.**Abstract.**

The plants individually described in Manuscript MS408 have all been identified as species from the environs of the Mediterranean Basin, in accordance with the location of origin for the manuscript. This series of papers presents each plant species separately with a translation of its accompanying text and any relevant cross-reference information. In addition to the linguistic value, there is plenty of historical, cultural and scientific knowledge to be gleaned from each of these manuscript pages, so they will be of interest to scholars from various disciplines.

Manuscript MS408 originates from Castello Aragonese, Ischia. It was written as an *aide-memoire* for Maria of Castile, Queen of the Crown of Aragon, c. 1444, whilst her husband, Alfonso V, was conquering the City of Naples. The manuscript remained in the castle library until 1912 when the citadel was sold into private hands by the Italian government and its contents were removed and traded off. Two years later the document found its way out of Italy and the nation unknowingly lost an important part of its heritage.

Within the manuscript there is a series of illustrations of medicinal herbal plants with accompanying text. This project identifies the plant species and translates the text to reveal the information imparted by the author and artist of each entry. The algorithmic method, of priority array queuing, was used to translate and identify the words in the text, as described in the following paper: <https://ling.auf.net/lingbuzz/004653> The method takes Latin as the principal source, with Old and Modern Romance as the secondary and tertiary sources. We can see that the language is placed somewhere between Latin and Romance in linguistic evolutionary terms: i.e. it is a vestigial form of prototype Romance.

Palaeography from historic languages and writing systems is never an exact science, especially when both are unfamiliar, but the subsequent transliterations into English phrasing provide adequately legible intention of meaning. In addition, many of the words are unambiguous in their Latin root and the text cross-references with botanical and medicinal information about the plants described in the images, so serving to verify the methodology.

The plant images are naïvely and inaccurately drawn and coloured, as the artist was untrained and should be viewed as simplified cartoon representations rather than anatomical illustrations. The images also focus on the relevant medicinal or culinary parts of the plants, so that the specimens are often incomplete, disproportionate, unscaled and shown in varying stages of development from young seedlings to mature plants in seed. A few of the images also contain additional pictorial information or annotations to highlight particular points for identification.

Some of the plants would have been grown in the physic and vegetable gardens of Castello Aragonese or else collected from Ischia island. Others would have been purchased from herbal plant suppliers travelling from mainland Europe, as dead specimens collected in the field and preserved by desiccation. Tinctures and essential oils would also have been

available for purchase. It is apparent that the illustrations essentially function in substitution for the plant names, simply because scientific names were not yet conceived, and common names would have varied regionally. So the combination of visual and written information was intended to enable the reader to identify the species and use them for medicine or food accordingly.

Plant Species:

Wolf-milk Spurge. *Euphorbia myrsinoides*.

The *Euphorbia* genus has a long history of traditional medicinal use, as the plants contain volatile chemicals called diterpene alkaloids. The milky looking sap causes severe skin reactions¹ and was once used to burn away warts and verrucas. In Middle English (c, 1150–1500) spurge was known as ‘anabulla’ (many blisters) from the Greek ἀνά (aná: of each) and the Latin bulla (a bubble).

Bark from the root was used for purging the body (as a laxative and emetic) and for treating rheumatic and gynaecological pains, and to induce labour, as is the case here. This particular species is characterized by its having upright non-branching stems with leaves stacked in a close geometric linear spiral. The leaves are lobate and fleshy (succulent) with pointed tips held in a skyward posture. They are glaucous (greyish-green) in colour but often turn reddish in hot climates. The plant naturally ranges eastward across the Mediterranean from Italy to Asia Minor, but has been introduced elsewhere. *Euphorbia myrsinoides* is noted for being highly potent, to such an extent that other plant species will not grow in its proximity. This is known as allelopathy, as the spurge toxins in the soil prevent the germination of other plant seeds.

Euphorbia myrsinoides has a number of subspecies through the eastern Mediterranean and Asia Minor, grouped under subsect *Myrsinitae*². These include *E. m. rigida* and *E. m. monostyla*, which are both very similar to *E. myrsinoides* taxonomically, as one might expect. The genus *Euphorbia* has an unusually high number of species, subspecies and hybrids, which is why botanists have divided it into subgenera and then subsects in an attempt to manage categorization and study, largely based on physical characteristics of similarity. The species name *myrsinoides* alludes to a superficial similarity in appearance with the unrelated Common Myrtle (*Myrtus communis*). For this reason, *E. myrsinoides* is sometimes known as Myrtle Spurge. In Italy the species is simply known as ‘Euforbia Simile al Mirto’ (Spurge Similar to Myrtle).

In France the species is known as the Corsican Spurge (L’Euphorbe de Corse) as it is well known on the Mediterranean island of Corsica. It prefers the rocky coastlines of the Mediterranean in general. Due to the conspicuous red leaves, the plant is also known colloquially as ‘Godet Rouge’ which translates as ‘red lower-skirt’ as a godet is a pleated lower section of a lady’s skirt, to make the garment flare out with added volume. Sometimes this takes the form of an addition loop of fabric, or it can be achieved by inserting a series of triangular fabric gores.

The word æior is used twice in the text, which is the vernacular Latin name for spurge, and survives in the eastern Romance language Romanian as aior and alior. The word is likely derived from a Medieval Latin name for wild lettuce, laitue, with an Iberian silent 'l' and junctural 't' (thus: ai'ue), itself derived from the Classical Latin for 'milky-plant' (*Lactuca*). Furthermore, wild lettuce was once known as 'wolf-milk' because it has bitter tasting white sap. *Euphorbia myrsinifera* also has bitter tasting white sap, so is accordingly known vernacularly as 'wolf-milk spurge' in Central Europe. The German name is Walzen-Wolfsmilch (twisting wolf-milk). It should be noted though, that wild lettuce sap is not harmful, whereas spurge sap is highly toxic to humans.

Spurges were historically known scientifically as *Tithymalus* or *Tithy*, from the Greek-Latin for 'completely or especially unpleasant' (tithú malus). The new genus name, *Euphorbia*, alludes to the Greek physician Euphorbus who first described spurge plants two millennia ago. The vernacular name, spurge, alludes to the use of the plants to 'expurge' or 'espurge', which are archaic variants of 'purge' from Latin. In this instance the plant is used to purge the body of an ectopic pregnancy (atypical foetus positioning in the womb), where other medicines have failed to induce sufficient contraction to eject the foetus, alive or deceased.

Medicinal spurge was originally called 'esulæ radix' (outside root. Latin) as only the reddish-brown bark of the root was used. This is clearly seen displayed in the manuscript image. The root bark was freshly pared away from the woody core and then dried, before being macerated in a solvent to release the volatiles by dissolving them, and to then regulate the dose by dilution. It was considered necessary to administer the medicine only when other remedies were not potent enough, as it has such a dramatic effect on the body³.

Frenchman Joseph Duchesne (Josephus Quercetanus), 1544-1601, describes the processing of esulæ radix by extracting the gum from the roots of *Euphorbia* in *The True and Perfect Spagyric (Alchemic) Preparation of Minerals, Animals and Vegetables, With Their Use*. Printed in English, London, 1591.

"You must dissolve them first in white rose vinegar; then strain them through a fine sieve of all their terrestrial matter; and do this three times to make it purer; then vapour away the vinegar that the sharpness be taken away; often washing it with rose water; for this medicine is sharp, of a thin and fiery substance. Euphorbia of all the gums is the hottest, subtlest and swiftest, and burns most with a fiery force, which it does with such violence that we must be greatly beware of the use of it except when rightly prepared, as it can kill."

"Take your Euphorbiæ, prepared and washed as is described, and cover it with spirit of wine, so that you may draw forth the essence, separating the waste and impurities; then mix with new sugar alcohol (spirit) for two days; then separate the coagulated residue by gently heating until the oil of mastic (gum) remains."

Using this technique, the medicinal volatiles were thus extracted first with acetic acid (vinegar) and then ethanol (alcohol) with a final reduction to obtain a concentrated gum or oleoresin. In the manuscript, over a century earlier, a different method is applied, whereby the spurge is simply braised and then chopped and preserved in olive oil, having been imbued with spiritual blessing. It is then fed to the unfortunate patient as required.

Translations and transliterations.

1. mæiot [v. maior, maius: greater, larger. Latin] dopar [doping, drugging. Spanish] éor [sister. Latin] eme'or [to acquire. Latin] naisa [v. naissa: birthing. French] sa [its. French]
2. a é'eos [to it's them. Portuguese] é'os [it's for. Portuguese] nasa [v. naza, nacer: to give birth. Old Portuguese, Spanish, Galician] domé'asa [taming it is. Portuguese, Spanish] éasa [that is. Spanish]
3. o é'os [it's for the. Portuguese] doéios [v. doeis: of suffering. Portuguese] éor [sister. Latin] naus [feed. Vulgar Latin] eme'a [acquired. Latin]
4. téia [v. téla. stabbing pains. Latin] é'os [it's for. Portuguese] éar [go. Latin] éasa éasa é'o [that is, that is, how it is. Spanish, Portuguese]
5. dolor [anguish. Latin] é orora [it's pray. Portuguese] éasa [that is. Spanish] e'meor [and continue. Latin]
6. a é maus [from it is bad. Latin, Portuguese] é'os [it's for. Portuguese] eme'osa [gets annoyed. Latin] o'mar [a lot. Portuguese] nasa [naza, naçer: giving birth. Old Portuguese, Spanish, Galician]
7. o méor [the way forward. Latin] do'naus [from the food. Portuguese, Vulgar Latin] éosa [which is. Portuguese] æ osa [v. odi: disliking for, displeased by. Vulgar Latin] nasao [v. nasço. giving birth. Portuguese]
8. a æios [to says. Latin] é'os [it's for. Portuguese] éor [sister. Latin] o la nasao [v. nasço: of the giving birth. Portuguese]
9. æo aos [it's to the. Portuguese] æior [spurge. Latin, Romanian] nasa [v. naza, nacer: to give birth. Old Portuguese, Spanish, Galician] o méona [of newborn girl. Spanish] or [now. Old Italian]
10. anas [v. añas. carers, midwives. Spanish] éor [sister. Latin] eme asa [v. assa: summon the Devil. Latin]

Note: The word asa [v. asar, aso, ase. Latin, assa] means hot, burning, roasting, fiery in Spanish. By extension, asa (v. assa) was vernacular Latin for the Devil: i.e. God of the Underworld, The Roaster. This survives in the word 'asafoetida' (Devil's stink), which is an eastern Mediterranean herbal plant, known as Devil's Dung (*Ferula assa-foetida*: Sceptre of the stinking Devil), which has a sceptre-like appearance, with a pungent sulphurous aroma and hot flavour, thus reminiscent of the volcanoes where the Devil was believed to reside.

Note: The word asa can also be the archaic form of the Latin ara, which means altar, sanctuary, refuge: e.g. téon asa (temple altar).

Note: The word nasao (v. nação, naçän. New and Old Portuguese) now means family or company of people with shared culture. The related Portuguese word nasço means the act of giving birth, being born, becoming family. The similar word naçer means to give birth, to be born: i.e. a different tense.

Note: The word méon (meón) means a newborn boy in Spanish, thus méona means a newborn girl, following the Latin suffix rule, but it might simply mean a newborn baby of either gender.

Note: The Latin word méor (v. méo) means onwards, way forwards, to pass, etc.

Note: The word mar (sea) is used in vernacular Portuguese to express ‘a lot’ or ‘very much’: i.e. using the expanse of the sea as a simile.

Note: Word Latin word téia (v. téla) means a piercing weapon, such as a throwing dart, arrow, spear or dagger. Thus it is used here to describe a stabbing or stinging pain.

Note: The terms nasa (v. naza, nacer) mean ‘to be born’ or ‘to birth’ in Old Portuguese, Galician. A related term naşă survives in Romanian, meaning midwife or godmother.

This is a stronger drug to achieve birthing. It is for giving birth by taming, that’s how it is. When the sister is suffering from stabbing pains it is necessary to proceed with acquiring this food – that is, that is, that’s how it is! In anguish we pray, it’s like this, and continue. When it is bad the sister gets agitated about giving birth, then the way forward is the food. As the sister is very irritable and says proceed with giving birth, it is up to the spurge to birth the new-born baby, so the midwives proceed to summon the Devil.

11. péior [worst, extreme, most potent. Latin, French] æor [v. æora. syn. gestatio: physical procedure. Latin] t [terminus. Latin] ort [v. hortus: vegetable garden. Latin, Occitan] æior (spurge. Latin Romanian] æia [v.aia: servant, chambermaid. Portuguese]
12. ola [cooking pot. Latin] nauis [food. Vulgar Latin] dól'éos [portion it's for. Latin, Portuguese] do [into, give. Latin] téon [abb. pantéon, panthéon: temple. Latin, French] asa [altar. Latin] o [of. Portuguese] eme [provide. Latin] a [and. Portuguese]
13. dolea [storage jars. Latin] do'm [abb. donum: sacred offering. Latin] æia [servant. Latin] dolona [v. dolon (dagger): Latin] dolæ'ia [v. cut is. Latin] é e'o na [it is in. Portuguese]
14. é'os [it's for. Latin] donais [donate, offer. Spanish] olea dolea [olive oil storage jars. Latin]

Note: The word æor (v. æora) is Latin from the Greek to suspend or lift ($\alpha\nu\psi\omega$): synonymous with ‘gestatio’, as stated in *Encyclopédie ou Dictionnaire Raisonné des Sciences des Arts et des Métiers*. (Encyclopedia or Dictionary for Understanding the Sciences, Arts and Trades) 1765, published by Denis Diderot (1713–84). The definition given for ‘gestatio’ is the physical manipulation by suspending, contorting, rocking and jolting of the body as a medical procedure to treat painful complaints – in this case, to free the baby from the womb due to ectopic positioning. In modern terms, it was an extreme form of chiropractic or osteopathic adjustment: bodywork. The similarity between the words ‘gestatio’ and ‘gestation’ is due to their shared Latin root word *gesto* (to carry): i.e. to carry the body into a different position and to

carry a baby, respectively. In the aforementioned encyclopaedia, Louis de Jaucourt (1704—79) reveals that ‘gestatio’ was contemporaneously practiced in 18th century France. It was Asclepius, the Greek mythological god of medicine, who is said to have introduced the practice according to Greek philosopher Aétius. Ironically, Asclepius is now used as the name for another spurge-like genus of plants, known as milkweeds, due to their white sap, which is also toxic and has been used similarly. The original Enlightenment description of æora is found in the *Universal Dictionary of Medicine. Vol. 1. 1743.* by Robert James (1703—76), which was first translated into French by Julien Busson (1717—81) in 1746: *Dictionnaire Universel de Médecine: Tome Premier:* Column 404.

Note: The word téon (abb. pantéon, panthéon) describes a domestic temple dedicated to all of their gods, as the Ischians were part-Christian, part-Pagan, in their beliefs. This was commonplace in the Mediterranean until the Early Modern Inquisitions were initiated in 1478 by the Catholic Church, against such heretical beliefs, and only three decades after the manuscript was written.

Note: The word dól is Vulgar Latin for a unit, portion, share, part, piece. It survives in Portuguese and Spanish with dólar and dól: i.e. a unit of money.

Note: The Latin word dolea is the plural of dolium (a storage jar).

Note: A dolon is a knife with a double-sided blade, used for chopping food into manageable pieces and as a utensil for eating.

Extreme æora/gestatio (physical procedure). The chambermaid takes spurge from the garden and cooks it in a food pot, then places some at the temple altar as a sacred offering in storage jars. It is cut with a knife and kept in olive oil in storage jars.

- 15. mæioas [v. maioas, maias: yeast wine: fermented wine. Portuguese, Romanian] -osa [full of. Latin] æ'as [it's the: Portuguese] o s [abb. opus sit: is needed. Latin] é'os [it's for. Portuguese] o'réta [to rectify, control. Portuguese] éosa [that is, which is. Portuguese] oméosa [v. homéosa: home-grown medicine is. Latin, French] oposas [opposite. Catalan]
- 16. o me'or [v. melhor. of best. Latin] éor [sister. Latin] t [terminus. Latin] é'eor [it's their. Portuguese, Latin] el [v. ele: he, she, it. Portuguese] æa [use, employ, have. Latin] doleosa [v. dolerse: as complaining. Spanish] dolar [to smooth. Spanish] nauis [feed. Vulgar Latin] torita [she-bull: a woman spitting-feathers, foaming at the mouth, out of control with pain. Spanish]
- 17. t [abb. tibi: to you. Latin] oio [hear please. Spanish] sa [v. sanus: health, sanity. Latin] ole o sa [come-on the health. Spanish, Latin] ameona [good female friend. Latin] doléo [I lament for. Latin] nar [fire, hell. Latin from Sanskrit] tasa [v. tasar: taxare: roughed-up, abused, assaulted. Spanish, Latin]

Note: The word oméos (homéos) survives in French to mean ‘home grown’ or ‘home made’: i.e. of home. It is also the root of the term homeopathy, as it comes from the

Greek ὁμοιος (*hómoios*), which means equalled, balanced, familiar: i.e. restored to normal.

Note: The word torita is a colloquial Spanish word meaning ‘small-bull’ or ‘she-bull’: i.e. a woman who is tormented by pain and discomfort, so that she behaves like an angry snorting bull and is difficult to manage – aggressive.

It is necessary to administer wine - to rectify the opposite effect of the medicine it is best to proceed. It is used to smooth the food as the she-bull complains. To you hear please, I wish for health and sanity as I lament the hell-fire assaulting a good friend.

18. péior [worse, worst. Latin] nosa [v. nossa: ours. Portuguese] æon'aus [time below. French] dopéos [take away, remove, dull. Portuguese] do'por [done by. Portuguese] o'péor [the fear. Old French] doma o'morosa [home of emotions. Latin]
19. o'méos [of my. Latin] or [v. ora, ore: now. Italian] é eos [it's them. Latin] do eos [give them. Latin] nais [nymph (baby): Latin] domeor [v. dormeoir: to sleep. Old French] dotaus [endowed with. Latin] é'os [it's for. Portuguese] eme'a [acquires it. Latin]
20. a éios [to eaten. Latin] éor o naus éor [sister to food, sister. Latin] t [triumphalis: victory. Latin] aus [abb. austera: below, south. Latin] olor [to smell. Latin, Old Spanish] os asa [v. assa: of the Devil. Latin].

Note: The Latin word morosa is fairly ambiguous in its precise use and meaning, but it's general meaning is moody, ill-tempered, wayward, unpredictable, unruly, difficult, emotional, morose. By extension it has come to mean inactive, delinquent, defaulting and unreliable in modern Romance languages.

Note: The Latin word éor comes from the Greek ἔορ, which means a distant female relative or someone regarded as family. Thus, the word sister is used here, as it implies sisterhood and friendship.

Note: The Latin word éios (eaten, to eat, eats) has several dialectic forms: éso, ésas, ésus, éisu, etc.

Our worst time below is done now the fear is taken away from the home of emotions, and the nymph (baby) is taken away so that the sister can sleep and eat, following the victory below with the smell of the Devil.

In Summary.

This is a stronger drug to achieve birthing. It is for giving birth by taming, that's how it is. When the sister is suffering from stabbing pains it is necessary to proceed with acquiring this food – that is, that is, that's how it is! In anguish we pray, it's like this, and continue. When it is bad the sister gets agitated about giving birth, then the way forward is the food. As the sister is very irritable and says proceed with giving birth, it is up to the surge to birth the new-born baby, so the midwives proceed to summon the Devil.

Extreme gestatio (physical procedure). The chambermaid takes spurge from the garden and cooks it in a food pot, then places some at the temple altar as a sacred offering in storage jars. It is cut with a knife and kept in olive oil in storage jars.

It is necessary to administer wine - to rectify the opposite effect of the medicine it is best to proceed. It is used to smooth the food as the she-bull complains. To you hear please, I wish for health and sanity as I lament the hell-fire assaulting a good friend.

Our worst time below is done now the fear is taken away from the home of emotions, and the nymph (baby) is taken away so that the sister can sleep and eat, following the victory below with the smell of the Devil.

Conclusion.

Clearly the use of spurge was considered a necessary evil, when other treatments had no efficacy. The text describes the unfortunate mother being plied with wine to dull the senses, before being treated with spurge so that she can be subjected to æora (gestatio) in order to contort the body and free the ectopic foetus from the womb. No wonder it was considered the work of the Devil, as it was a tortuous, terrifying and tiring process.

The text on this manuscript page is relatively lengthy, as the author needed to impart a proportionately high amount of information in four stages. Firstly, to explain the use of spurge as a last resort. Secondly, to describe the preparation and storage of the spurge and the spiritual ritual in readiness for æora. Thirdly, to explain that wine is needed to dull the pain. Fourthly, to describe the relief in the aftermath of the unpleasant procedure.

The language is essentially a combination of Latin and archaic Iberian, as the manuscript was written within the Crown of Aragon, which was ruled from Iberia. It still has much in common with the Lusophone languages, because they have been relatively geographically and memetically isolated since the 15th century and therefore evolved less than the other Romance languages, which were subject to higher levels of Mediterranean cultural flux during the Renaissance.

Fig. 2 shows three subspecies from the aforementioned Myrsinites subsect. They are all very similar and show the reddening of the leaves that is typical in the Mediterranean coastal Middle East regions. This occurs where the plants grow in places with very limited soil moisture, so they retract chlorophyll to retard growth when the ground becomes too dry for continued growth, leaving the red pigmentation portrayed in the manuscript illustration, shown in Fig. 1. The specimens seen in the antique images of Figs. 4 & 5 lack the reddening because they are specimens grown in moist soils. The characteristic red-brown root system of *E. myrsinites*, is seen in the unearthed specimen shown in Fig. 3.

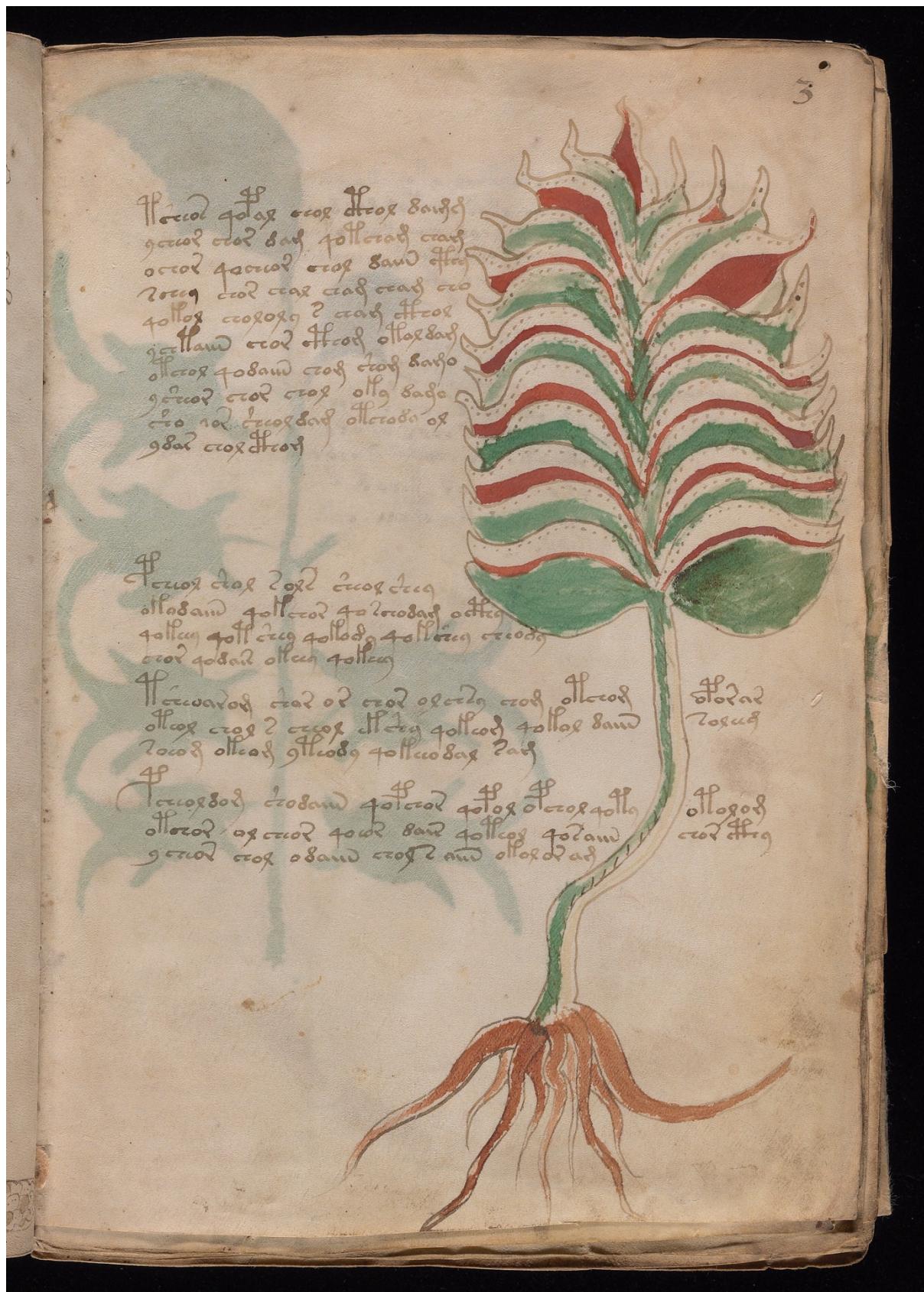


Figure 1. Wolf-milk Spurge. *Euphorbia myrsinites*. Portfolio 3, Right. Showing a young plant prior to flowing, with the red-brown roots used for making the medicine 'esulæ radix'.



Figure 2. Showing *Euphorbia myrsinites* (above) and two Myrsintataea subsect subspecies *E. m. rigida* and *E. m. monostyla* (below, left and right).



Figure 3. A mature specimen of *Euphorbia mysinites*, showing the characteristic red-brown root system.

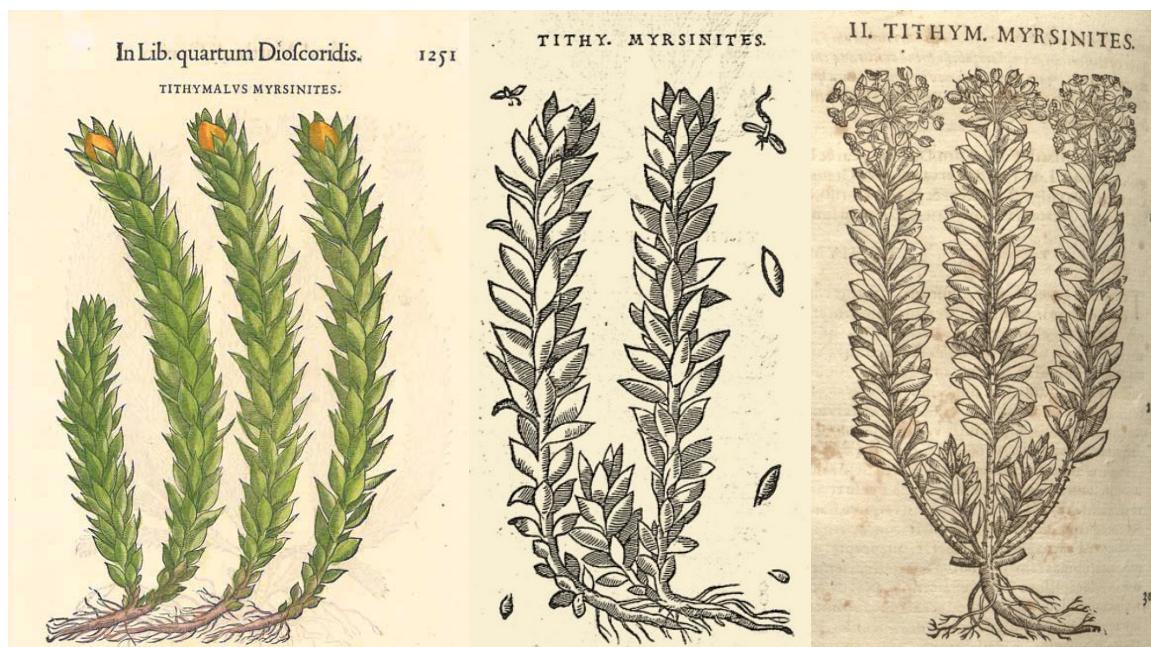


Figure 4. Three 16th century engravings of *Euphorbia myrsinites* by Pietro Andrea Matthioli (1501–77). One uses the old genus name in full, *Tithymalus*, and the others abbreviated to *Tithy* and *Tithym*. Compendium of Medicinal Plant Images. First Edition 1544.



Figure 5. Left: 1557 engraving of *Tithymalus myrsinoides*, by Adam Lonicer in *Krauterbuch* (Herb Book). Centre: 1554 engraving of *Tithymalus myrsinoides*, by Rembert Dodoens (1517–85) in *Stirpium Historiae* (History of Plants). Right: Early Medieval (c. 487–580) image of *Tithymalus myrsinoides*, in copy of *Erbario Greco: Materia Medica* (Greek Herbs: Medicines), by Pedanius Dioscorides (c. 40–90 AD) originally written in circa. 65–70 AD. Note that someone has written the Middle English for spurge ‘anabulla’ above the Greek.

Discussion.

As spurge has been known as a medicinal plant since Antiquity there is a reasonable record of its use across the past two millennia. What is most fascinating here is the application of spurge as a form of æora and its association with Medieval belief in the Devil. More specifically, the Devil is called upon to assist, as part of polytheistic belief system, even though the people thought of themselves as Christians.

We know, from other source, that the work of Dioscorides remained the primary reference for medical advice from Antiquity to the Enlightenment, and this text is clear evidence that his advice was based on the culturally received wisdom of prescientific Mediterranean Europe, not least because the use of spurge for purging the body actually worked. It may have been extremely unpleasant and potentially lethal, but it had the desired result, so it was used in the absence of modern allopathic drugs.

The established perception of æora is that it was primarily a physical manipulation of the body, akin to modern chiropractic massage, so it is interesting to discover a different definition of æora, as a chemically induced seizure to force birth. In essence, the effect of the spurge was to cause convulsions that the mother simply couldn't manage herself due to pain, exhaustion and fear.

Citations:

1. Eberle, M. M., Erb, C., Flammer, J., & Meyer, P. (1999). Dermatitis and conjunctivitis after contact with *Euphorbia myrsinifolia* (wolf's milk extract): a case report. *Klinische Monatsblätter für Augenheilkunde*. Vol. 215. No. 3. pp. 203-204.
2. Pahlevani, A., Geltman, D. V., & Riina, R. (2011). Taxonomic revision of Euphorbia subsect. Myrsinifoliae in Iran. In *Annales Botanici Fennici*. Vol. 48, No. 6, pp. 483-494. Finnish Zoological and Botanical Publishing Board.
3. Rees. A. (1812). *The Cyclopædia, or Universal Dictionary of Arts, Sciences and Literature*. Vol. XIII. Alphabetical entry: Esulæ radix. Strahan & Preston. New-street Square. London.

Further reading:

1. Plant Series, No. 1. *Atropa baetica*: <https://ling.auf.net/lingbuzz/004797>
2. Plant Series, No. 2. *Serratula erucifolia*: <https://ling.auf.net/lingbuzz/004845>
3. Plant Series, No. 3. *Nymphaea alba*: <https://ling.auf.net/lingbuzz/004864>
4. The Language and Writing System of MS408 (Voynich) Explained.
<https://www.tandfonline.com/doi/full/10.1080/02639904.2019.1599566>
5. Linguistic Missing Links. <https://ling.auf.net/lingbuzz/003737>
6. Linguistically Dating and Locating Manuscript MS408.
<https://ling.auf.net/lingbuzz/003808>
7. Consonants & Vowels, Castles and Volcanoes. <https://ling.auf.net/lingbuzz/004381>
8. The Algorithmic Method for Translating MS408 (Voynich).
<https://ling.auf.net/lingbuzz/004653>

Symbol key for Manuscript MS408. Gerard Edward Cheshire. University of Bristol. www.sciencesurvey.ink

Symbol-Italic key for MS 408.			
Symbol	Italic	Symbol	Italic
ꝑ	a (trapped)	ꝑ	a (free)
ꝑꝑ	ais	ꝑꝑ	aus
ꝑ	æ (ae, a, e, i)	ꝑ	d
ꝑ	e (short)	ꝑꝑ	e'e (intonation)
ꝑ	é (long)	ꝑ	i
ꝑ	l (ll)	ꝑꝑ	ele (elle)
ꝑ	m (mm)	ꝑꝑ	eme (emme)
ꝑ	n (nn)	ꝑ	o
ꝑ	p (pp)	ꝑꝑ	epe (eppe)
ꝑ	qu	ꝑꝑ	eque
ꝑ	r (rr)	ꝑ	s/z (ss, zz)
ꝑꝑ	s/z (ss, zz)	ꝑ	sa/za
ꝑ	t (tt)	ꝑ	ta
ꝑ	u	ꝑꝑꝑ	v, f, fv, ph, pv