

# The Medical Use of Cannabis Among the Greeks and Romans

James L. Butrica

**ABSTRACT.** This article, which contains a complete survey of the surviving references to medical cannabis in Greek and Latin literature, updates the last serious treatment of the subject (Brunner 1973).

Though it eventually became commonplace, cannabis seems to have been largely unknown to the Greeks in the fifth century BCE, when Herodotus wrote his description of the hemp vapor-baths used by the ancient Scythians, which constitutes the earliest reference in Greek literature. While its use in medicine is not attested until the first century CE, it was evidently well established by then. The Roman writer Pliny the Elder records several medical uses, but comparison with Greek writers suggests that he is sometimes mistaken, and there is no secure evidence for the medical use of cannabis by the Romans. Greek writers, on the other hand, report the use of cannabis in treating horses—especially for dressing sores and wounds—and in treating humans. Here we find the dried leaves used against nosebleed and the seeds used against tapeworms, but the most frequently mentioned treatment involves steeping the green seeds in a liquid such as water or a variety of wine, then pressing out the liquid, which when warmed was instilled into the ear as a remedy for pains and inflammations associated with blockages. Many sources also observe that the seeds, when eaten in quantity, dry up the semen; a passage in Aëtius shows that they could be prescribed as part of the treatment for teenaged boys (and girls) afflicted by nocturnal emissions.

A recreational consumption of cannabis seeds is attested first in the comic poet Ephippus in the 4th century BCE and again in Galen in the second century CE.

Ancient medical writers classified cannabis among foods with a

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warming effect, foods with a drying effect, foods that harm the head, foods that thin the humors, and foods that prevent flatulence. It was acknowledged to have an intoxicating effect not characteristic of the seed of the agnus-castus, which was sometimes prescribed in its place.

Perhaps that intoxicating effect, and the prescribing of cannabis seed to teenaged boys, lies behind the controversy over the “proper” medical use of cannabis at which Galen hints when he says that its only proper use is to thin the humors through the urine. [Article copies available for a fee from The Haworth Document Delivery Service: 1-800-HAWORTH. E-mail address: <getinfo@haworthpressinc.com> Website: <http://www.HaworthPress.com> 2002 by The Haworth Press, Inc. All rights reserved.]

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This paper is intended to update our knowledge of the medical use of cannabis in the Classical world, a topic on which the only serious discussion is Brunner 1973 (largely repeated in Brunner 1977). While no previously unknown texts have been discovered in the meantime, the availability of the *Thesaurus Linguae Graecae* (a searchable database of ancient Greek literature developed by Dr. Brunner and others) now permits a more thorough investigation of the ancient sources than ever before; the result has been not only to reveal some additional treatments not known to Brunner but also to suggest a new understanding of some of the data.

Cannabis went by a variety of names. In the first century CE, Dioscorides 1907-1914, *Materia medica* 3.148 mentions *kannabion* (a diminutive form, “little cannabis,” “dear cannabis”), *skhoenostrophion* (“rope-twister”), and *asterion* (“little star”). An ancient scholarly note on line 181 of Aristophanes’ comedy *The Acharnians* says that *sphendamos* was another name for cannabis because its fibres were used to make slings (*sphendonai*). Finally, the lexicon of Hesychius, compiled probably in the fifth century CE, adds *phalis* as another equivalent (*phi* 108); it is unclear whether there is any connection with the fact that *phalis* is also attested in Pausanias as the title of a priestess of Hera at Argos. Dioscorides notes as well that cannabis was sometimes called “domesticated” or “tame” cannabis (*hêmeros*) to distinguish it from another medicinal plant now identified as hemp mallow (*Althaea kannabina*); this was called, in Greek, either *hydrastina* or “wild” cannabis (*agria*) and, in Latin, “terminal” (*terminalis*; this use of *terminalis* is not attested in any Latin source or recognized by any Latin dictionary, probably because we know it only from the Greek writer Dioscorides; it perhaps reflects a tendency of the plant to grow along paths and hedges and other borders [*termini*], as noted in the *Herbarium* of ps.-Apuleius, 106). Although “wild” cannabis will not be discussed

in this paper, a few of the several ancient references to its medical use are included in Appendix I on the grounds that some ancient medical writers, especially Pliny the Elder, make otherwise unsupported claims about the medical use of “tame” cannabis that closely resemble well-attested uses of “wild” cannabis.

In general, cannabis was a completely uncontroversial element of everyday life for both the Greeks and the Romans, used to make mats, shoes, cloth, and above all ropes. The Romans especially favored hemp for the rope in hunting nets; among the Greeks, on the other hand, it was more often used to make the nautical ropes called *kaloi*, used for furling or “rolling up” the sails and hence known, in English, as “reefing-ropes.”

Medically, it was used to treat horses as well as humans; the evidence for its veterinary use is summarized in Appendix II. In the treatment of humans, it was part of the physician’s armamentarium, though no more so than a host of other plants. Several parts of the plant could be used. Pliny mentions using the uncooked root on burns, but he may have been thinking of “wild” cannabis here. Another source has cannabis ash used in a poultice, but does not say which part of the plant was burned to produce it. Fresh leaves were used to dress horses’ sores, dried ones against nosebleed. But it is the seeds whose use is attested most often, both “green” and mature, distinguished in Greek as *karpos* (“fruit”) and *sperma* (“seed”).

Before beginning the survey proper, it is just as well to note where cannabis does *not* appear in our ancient medical texts.

First of all, though the medical use of cannabis is recorded in the encyclopedia of Pliny the Elder (written in the middle of the 1st century CE), it is absent from the medical writings of another contemporary encyclopedist, A. Cornelius Celsus (first half of the 1st century), and it seems to be mentioned elsewhere in Latin only in late authors who for the most part translated directly from Greek, such as Marcellus Empiricus (5th century CE) and pseudo-Theodorus (6th century CE?). Hence there is nothing to show conclusively that it was used medically by the Romans, though given the scarcity of evidence I would be reluctant to say that no Roman was ever treated with it; it is conceivable, for example, that when a late Roman authority like Marcellus cites an otherwise unattested use of cannabis, it comes from Roman folk-medicine.

Second, the medical use of cannabis is absent from the works of gynecologists like Soranus (2nd century CE), though this does not necessarily prove that it was never used in treating women. In fact, though one of the principal uses of cannabis seed is one that seems to us to be logically applicable only to males, Aëtius (6th century CE) says that it could be used on women as well. Perhaps the most we can say is that it seems not to have been used for any condition specific to women.

Third, medical cannabis is absent from the writings of Hippocrates (5th century BCE) and his followers, known collectively as the Hippocratic Corpus, though we need not infer that he rejected its use: despite its eventual ubiquity in the classical world, cannabis was evidently unknown to the Greeks before the 5th century BCE, and so Hippocrates' silence may well represent ignorance, not conscious rejection, though absolute certainty is of course impossible.

Cannabis first appears in Greek literature in the celebrated passage where the historian Herodotus, an approximate contemporary of Hippocrates, describes how the ancient Scythians used to toss cannabis seeds onto red-hot rocks and inhale the vapors that were released (4.73-75). Since Herodotus is not concerned with the medical use of the plant, there is, strictly speaking, no reason to discuss the passage at length here; but Brunner (1973, pp. 345-347) discusses it, and the archaeological discoveries alluded to there in n. 45 require some rethinking of what Herodotus described, especially since modern retellings of Herodotus' account continue to abound in inaccuracies and fanciful inventions: Emboden (1972, p. 223) for example, has the Scythians using rocks from funeral pyres, and claims that Herodotus describes them dancing and singing in response.

It should be remembered that cannabis seeds were used by the Scythians not recreationally but as a part of their death-ritual: instead of a wake, they put the corpse of the deceased into a wagon, and for forty days took it on visits to the homes of friends and kin, where it was served at table along with the other guests. It was at the end of this period of mourning that men resorted to the hemp-baths as a form of cleansing (the head being washed first with soap), while the women pursued a different treatment (they smeared a paste of cypress, cedar, and frankincense on their bodies and allowed it stand for a day; when removed, it left their skin fragrant, clean, and shiny).

The nature of the ritual is relevant to the interpretation of the words with which Herodotus describes how the Scythians reacted to the vapor from the seeds, *agamenoi ôruontai*, which are often translated as “[they] howl with delight” or the like. The onomatopoeic verb *ôruontai* certainly describes howling and is used, for example, to describe the sound of wolves (*LSJ* [H.G. Liddell, R. Scott, H.S. Jones, *A Greek-English Lexikon* (Oxford 1968)] *s.v.* “*howl*, prop. of wolves and dogs”); the most recent translation of Herodotus (by R. Waterfield [Oxford 1998]) is therefore certainly wrong to use “shriek.” As to the participle *agamenoi*, which describes the state of mind in which the Scythians do their howling, this is invariably translated as “with delight,” “with pleasure,” or the like; but *LSJ*, *s.v.* *ôrumomai*, offers only this passage when illustrating the sense “to howl with joy,” and in fact it notes that elsewhere in Herodotus it means “to howl in mourning.” The latter is closer to what one might expect in a ritual connected with death, and in fact the basic

meaning of the verb *agamai* is “to be amazed” or “astounded,” perhaps expressing here a state of stupefaction. The currently favoured translation may reflect a modern expectation that those who inhale such vapors ought to have a “Reefer Madness” experience and become hysterical, but hilarity conflicts with the fundamentally solemn nature of the experience.

The archaeological discoveries affect the interpretation of the “tents” involved. Herodotus notes that “they lean three poles against one another, cover the poles with felted woolen blankets, making sure that they fit together as tightly as possible, and then put red-hot stones from the fire on to a dish which has been placed in the middle of the pole-and-blanket structure” (4.73); subsequently “the Scythians take cannabis seeds, crawl in under the felt blankets, and throw the seeds on to the glowing stones” (trans. Waterfield). Tombs excavated in Russia have yielded not only an example of the brazier on which the stones were placed but two sets of those “tent-poles” as well. Perhaps the most accessible account is Artamonov (1965; p. 239) there is an illustration of objects recovered from one of the tombs, namely a pot containing hemp seeds, a “censer” that would have held the hot rocks onto which the seeds were thrown, and six “sticks” that “formed the frame of an 18-inch-high tent in which the hemp smoke was collected” (caption). Because of their height, however, these poles could never have formed a viable sauna or spirit-lodge, which the Scythians are sometimes thought to have used, and Waterfield’s translation is consistent with this, rendering the verb *hypoduô* as “crawl,” as the Scythians would have to do in order to insert their heads into such a structure at ground level.

Since Herodotus’ account shows that the Greeks were already familiar with vapor-baths (he states at 4.75 that the seeds release a vapor which no Greek vapor-bath could surpass), it should not be surprising that some of them may have adopted the Scythian habit of using hemp-seed there; that much at least can be inferred from the fact that Hesychius’ lexicon (*kappa* 673) records a verb *kannabisthênai* (“to get cannabissed,” in effect), defined as “to grow sweaty and hot from the effect of cannabis.” It is striking, however, that this definition makes no reference to the cannabis “seizing the head” (the standard euphemism for intoxication), though this just might be subsumed under “to grow hot,” since we will see that cannabis seed (eaten, however, rather than inhaled in vapor form) was thought to have a “warming” effect on the body.

Apart from Herodotus, the evidence for Greek familiarity with cannabis in the late 5th and early 4th centuries BCE is ambiguous, consisting of somewhat later scholarly notes that identify certain objects mentioned in comedies of Aristophanes as made from hemp (see the scholia [ancient scholarly notes] to Aristophanes, *Acharnians* 181, *Knights* 129 and 954, *Wasps* 394, and *Plutus* 268); these interpretations, however, may be nothing more than ahistorical as-

sumptions by scholars who lived in a world where hemp products were ubiquitous.

But by about the middle of the 4th century BCE we have evidence for a new use of cannabis seeds, their consumption as a food. Fr. 13 of the comic poet Ephippus constitutes a list of *tragêmata* or “snacks” consumed while drinking at a symposium (the ancient equivalent of the modern Greek *mezedhes*), including *kannabides*. This is a plural form, though probably not (as always assumed) of *kánnabis*, accented on the first syllable and supposedly designating cannabis seed here (though the seed is elsewhere called *karpos* or *sperma*), but of *kannabís*, accented on the last syllable and designating a confection of cannabis seeds and honey. Lexica of ancient Greek do not recognize the existence of *kannabís* = “cannabis-seed cake,” but the other foods in Ephippus’ list are prepared rather than raw, and *kannabís* in this sense would have the same relationship to *kannabos* (an alternative form of *kannabís*) that *sesamís*, meaning “sesame-seed cake,” has to *sésamos*, meaning “sesame-seed.”

We will encounter this recreational consumption of the seeds again in the physician Galen, who confirms that they were enjoyed for their psychoactive effect.

We cannot tell when the medical use of cannabis began; since, as far as we can see, the Greeks were eating the seeds before they were using them medically, it was perhaps inspired by observations regarding the physiological effects of that consumption. Whenever it began, it was evidently well established by the time of our earliest references to it, which come in the 1st century CE.

Probably the earliest surviving account of the medical use of cannabis is the entry in the *Materia medica* of the Greek physician Dioscorides, published around 65 CE, followed closely by the one in the *Historia naturalis* of Pliny the Elder, finished in 77 CE and dedicated to the emperor Titus. Despite the likelihood that Dioscorides deserves priority, I shall begin with Pliny; he is the only classical Roman writer to discuss the medical use of cannabis, and he lists more medical uses than anyone else, though he is sometimes in conflict with other authorities.

Pliny’s *Historia naturalis* has two substantial entries for hemp, one concerned principally with its use in making rope (Pliny the Elder 1967, 19.273-274), the other on its medical use (Pliny the Elder 1967, 20.259):

Cannabis in siluis primum nata est, nigrior foliis et asperior. semen eius extingueret genituram uirorum dicitur. sucus ex eo uermiculos aurium et quodcumque intrauerit eicit, sed cum dolore capitis, tantaque uis ei est, ut aquae infusus coagulare eam dicatur; et ideo iumentorum alio succurrit potus in aqua. radix articulos contractos emollit in aqua cocta, item

podagras et similes impetus; ambustis cruda inlinitur, sed saepius mutatur priusquam arescat.

Cannabis, rather dark and rough in respect to its leaves, first grew in the forests. Its seed is said to extinguish men's semen. A liquid from this casts out ear-worms and whatever animal has entered, but with a headache, and its force is so strong that it is said to coagulate water when poured into it; and so it is good for farm-animals' bellies when drunk in water. Cooked in water, the root softens contracted joints, likewise gout and similar attacks; uncooked it is spread on burns, but is changed rather often before it dries out.

As can be seen from passage A in Appendix I, Pliny's description of the original plant as dark and rough of leaf resembles Dioscorides' description of "wild" cannabis as having darker and rougher leaves than "tame." Perhaps this reflects a belief that "tame" cannabis had been bred from "wild" cannabis (Herodotus already distinguishes between cultivated and wild varieties of the plant known to the Scythians); or perhaps—and not for the last time—Pliny confused the two plants or carelessly ignored the distinction.

Whether or not this is the earliest surviving account of Greco-Roman medical cannabis, it is certainly our single fullest catalogue of medical uses, though Pliny is explicit about the nature of only four of the five treatments that he records:

1. The use of the seeds: Pliny does not say how the seeds were used, nor is he explicit about why. His comment that they "extinguish the semen" recalls modern claims about reductions in sperm levels in frequent users (cf. Brunner 1973, pp. 349, 351 [with n. 33], and 353); but if the same phenomenon is indeed involved in both cases, one wonders just how the ancients were able to make such an observation. Brunner (1973, p. 349) interprets this and similar ancient comments as references to impotence; it is more likely, however, that they reflect a belief that the seeds have a "drying" quality (as that was understood in ancient physiology), and a passage in Aëtius will show us what appears to have been the main medical purpose of the seeds, which was precisely to "dry up" leaking semen.
2. Its use in treating the ears: Pliny refers to a *sucus* made from the seed that was used to clear vermin out of the ears. Unfortunately, *sucus* is a term of wide application that in a context like this one could designate either a natural juice like sap or a prepared potion. Logically, however, Pliny ought to be referring to the same thing as the *khylos* named in our Greek sources (discussed below) as a treatment for the ears, but no Greek writer has this *khylos* being used against "ear-worms." These vermin were perhaps first mentioned by the satirist Lucilius (2nd century BCE),

but they seem to have been a particular problem in the early Empire, since Pliny records three other remedies for them (Pliny the Elder 1967, 20.256; 23.85; 28.65). Instead, Dioscorides and Galen say that the *khylos* was used for treating pains and inflammations associated with the ears. This is the first—and certainly not the last—time that we must question whether we can take Pliny at his word and assume that he has tapped into a medical tradition not attested in our other sources, or whether he was mistaken because he had difficulty in understanding a Greek source, used defective texts of Greek medical writers, or was simply confused. In fact, there is a second example of this same dilemma here, since headaches, which Pliny ascribes to the use of this *sucus* in the ears, are elsewhere associated with eating the seeds.

3. This *sucus* as a remedy for the “bellies” of farm-animals: If Pliny means that it was used to prevent or control diarrhea (a Latin word meaning “therefore” connects this reference to the ability to coagulate water), this is another use known to him alone. If, on the other hand, he is alluding to the seed-based remedy for tapeworms attested in the treatment of both humans and horses (see below), this remedy does not involve the preparation of a *khylos*, only a combination of chopped seeds and water filtered to remove the grit.
4. The use of the cooked root on joints and against gout: No other medical authority mentions any medical use for the cannabis root; on the other hand, two passages in Dioscorides (passages A and B in Appendix I) refer to a poultice made from the boiled root of *wild* cannabis supposedly effective against inflammations and chalk-stones (*Materia medica*) or against chalk-stones and twisted sinews (*Euporista*).
5. The use of the raw root on burns: No other medical authority mentions any use for the uncooked root of cannabis, but we have recipes (including passage C in Appendix I) for preparations supposedly effective against such eruptions on the head as melicerides (encysted tumors) that use the “dry” root of *wild* cannabis.

Pliny is a source that should be used with the greatest caution; while he provides information that other sources do not, some of his “facts” could be argued to result from confusing different uses of cannabis, or from confusing the medical uses of cannabis and of wild cannabis.

Dioscorides’ *Materia medica* is a complete guide to ancient medicines, describing in its botanical section both the appearance and the medical uses of the plants discussed; its entry for cannabis includes more or less the same two points with which Pliny began (Dioscorides 1907-1914, *Materia medica* 3.149.1):



κάνναβις· φυτὸν εὐχρηστον τῷ βίῳ πρὸς τὰς τῶν εὐτονωτάτων σχοινίων πλοκάς. φύλλα δὲ φέρει παραπλήσια τῇ μελίᾳ, δυσώδη, καυλοὺς μακροὺς, κενοὺς, καρπὸν στρογγύλον, ἐσθιόμενον, ὃς πλείων βρωθεὶς σβέννυσι γονήν· χλωρὸς δὲ χυλισθεὶς ἀρμόζει πρὸς τὰς τῶν ὤτων ἀλγηδόνας ἐνσταζόμενος.

Cannabis: A plant useful for life on account of the twisting of well-strung ropes. It bears foul-smelling leaves resembling the ash, large hollow stems, a round fruit which is eaten, and when consumed in quantity extinguishes the semen; if infused when green, it is suitable for instilling against ear-aches.

Dioscorides perhaps described the leaves more clearly in another work, when he wrote of the leaves of the eupatorium that they “are set at a distance and strongly split into 5 or more parts, looking much like those of the cinquefoil or cannabis” (Dioscorides 1907-1914, *Materia medica* 4.41; much the same information is provided by Pliny the Elder 1967, 25.65 and Oribasius 1933, *Collectiones medicae* 11.*epsilon*.20).

Though he too seems not to be explicit about the medical use of the seeds, Dioscorides records the valuable information, absent from Pliny’s account, that they affected the body as a result of being eaten and that they had to be consumed in substantial quantities to produce the drying effect.

With regard to the treatment for earaches, Dioscorides specifies that the seeds were prepared while still green and immature. The participle *khylistheis*, translated above as “infused,” shows that they were subjected to the process called *khylosmos*, which resulted in a *khylos*, a juice combining substances from both the seeds and the liquid in which they were infused; such a *khylos* made from green cannabis seed is mentioned in another work of Dioscorides (Dioscorides 1907-1914, *Euporista* 1.54) as one of several preparations effective against “pains and inflammations around the ears” if instilled while warm.

Brunner (1973, pp. 350 and 353) understands the liquid used in the ears as “seed-juice,” but pressing the seeds would surely yield oil rather than “juice.” According to *LSJ*, *khylizô* means to extract juice from a plant through either infusion or decoction, but an examination of Dioscorides’ actual usage reveals that the process involved only infusion, not decoction. It was evidently common enough to be mentioned well over 100 times in the *Materia medica* alone, and it was normally applied to plants (there is an entire section on how to *khylizēin* dry botanical material), though there is also one formula for asses’ dung infused in wine as a remedy against scorpion-bites. The plant might be worked whole, root and all, or only one part might be used (roots, stalks, grasses, leaves, and seeds are all attested explicitly), or some combination of two or more of these. Whatever was being processed was first prepared, almost

always by chopping, though there are a few references to preparing roots by bruising. To this a liquid would then be added. One recipe suggests water or wine, another rain water or old wine; other liquids mentioned include warm water, *passum* (a very sweet wine made from raisins), oxymel (a combination of vinegar and honey), and honey-wine or mead (mentioned three times, twice as *melikraton*, once as *hydromel*). A period of steeping presumably followed in all cases, though it is mentioned explicitly only a few times, and only two recipes specify the length (5 days in both cases; two others say “sufficient days”). This steeping did not involve the application of heat; a few formulas in the *Materia medica* specify a period of boiling, but it always follows the steeping (hence the inappropriateness of “decoction” as a translation of *khylos*). After steeping (and sometimes boiling), the plant material would be strained (a strainer is mentioned once) or squeezed in a press (again mentioned only once, but its use was presumably standard) to extract the liquid, which constituted the *khylos*. While the creation of this liquid was obviously the goal with cannabis seed and with some of the other formulas, in other cases the goal was instead to transform the plant material itself, which would subsequently be dried, sometimes in sun, sometimes in shade, before use, while the *khylos* would apparently be discarded (if not already boiled away). Thus the preparation that was warmed and instilled into the ear against inflammations and pains would have been produced by chopping green cannabis seeds, soaking them for a period in water or some mildly alcoholic liquid such as wine, and finally pressing out the fluid. If this is indeed the same as the *sucus* mentioned by Pliny as having the ability to “coagulate” water, then uncertainties about the liquid used to produce it make it difficult to comment on the speculation offered at Brunner (1973, p. 353).

The medical use of cannabis continues to be well attested in the second century CE in the writings of the Greek physician Galen. His work *De simplicium medicamentorum temperamentis et facultatibus* (“On the temperaments and properties of simple medications”) offers an evaluation of the utility of the seeds which again begins with the very same two points made by Pliny and Dioscorides (Galen 1821, XII.8):

Καννάβεως ὁ καρπὸς ἄφυσός τε καὶ ξηραντικός εἰς τοσοῦτόν ἐστιν ὥς, εἰ πλείων βρωθείη, ξηραίνειν τὴν γονήν. ἔνιοι δὲ χλωρὸν αὐτὸν χυλίζοντες εἰς ὕτων ἀλγήματα χρῶνται τὰ κατ’ ἐμφραξιν, ὥς ἐμοὶ δοκεῖ, γινόμενα.

The fruit of cannabis is both non-flatulent and drying to such an extent that, if consumed in quantity, it dries up the semen. Some make an infusion of it while green and use this against those ear-aches, I believe, that occur through blockage.

In terms of treatment, the novelty here is the acknowledgement that the infusion works specifically against ear-aches caused by blockage; though (unlike Dioscorides) he does not remark that it was used warm, could Galen have realized that the *khylos* was effective simply because, like any other warm liquid, it could dislodge ear wax? Another novelty here is our first reference to the anti-flatulent quality of the seeds; a later writer notes that this property is so strong that, if cannabis seeds have been eaten, there is no flatulence even after eating foods that cause it (Oribasius 1933, *Synopsis* 4.21, “the fruit of cannabis is non-flatulent even after flatulent foods”). Brunner (1973, p. 350) has the ambiguous translation “eliminates intestinal gas”: “prevents” would be more precise.

Galen’s account also puts the use of cannabis seeds within the context of ancient medical theory. Health was dependent not only upon the proper balance of the four humors black bile, yellow bile, blood, and phlegm but also upon the proper balance of the four qualities of warm, cold, dry, and moist; indeed, it could be influenced through the consumption of or abstention from those foods and medications that inherently possess these qualities or enhance them in the body. Hence we can see for the first time a connection between the drying up of semen through high-level consumption of the seeds and a supposed “drying” quality inherent in the seed (see also Hesychius’ lexicon [*kappa* 764], which defines cannabis as a Scythian *thumiama* [i.e., incense] that has the ability to “dry out” everyone in the vicinity).

Since many ancient medications were, as we now say, “natural-source” and were in fact everyday foods as well, Galen also wrote about the eating of mature cannabis seed in another work called *De alimentorum facultatibus*, “On the properties of foods” (Galen 1821, VI.549):

Περὶ καννάβεως σπέρματος.

Οὐχ ὡσπερ αὐτὸ τὸ φυτὸν τῆς καννάβεως ἔοικε πῶς τῷ ἄγνῳ, καὶ τὸ σπέρμα τῷ σπέρματι παραπλήσιον πῶς ἐστὶ τὴν δύναμιν, ἀλλ’ ἀποκεχώρηκε πάμπλου, δύσπεπτόν τε καὶ κακοστόμαχον ὄν καὶ κεφαλαγῆς καὶ κακόχυμον. ὅμως δ’ οὖν καὶ τοῦτό τινες ἐσθίουσι φρύγοντες ἅμα τοῖς ἄλλοις τραγήμασιν. ὀνομάζω δὲ δηλονότι τραγήματα τὰ παρὰ τὸ δεῖπνον ἐσθιόμενα τῆς ἐπὶ τῷ πίνειν ἡδονῆς ἕνεκα. θερμαίνει δ’ ἱκανῶς καὶ διὰ τοῦτο καὶ κεφαλῆς ἀπτεται βραχεῖ πλεῖον ληφθέν, ἀτμὸν ἀναπέμπων ἐπ’ αὐτὴν θερμόν θ’ ἅμα καὶ φαρμακῶδη.

On the seed of cannabis:

While the cannabis-plant itself resembles to a degree the agnus plant, the seed is not at all like its seed in its power but completely different, being

both hard to digest and tough on the stomach and headache-inducing and bad-tasting. All the same, however, some people eat it, munching on it together with other snacks. By ‘snacks’ I mean the things eaten at dinner on account of the pleasure associated with drinking. It warms sufficiently, and for that reason it also intoxicates quickly when eaten in quantity by sending toward the head a vapor that is both warm and medicinal.

The word translated “vapor” here (*atmos*) is another form of the one used by Herodotus to describe what was released when the Scythians threw cannabis seed onto the hot rocks (*atmis*). The word translated “medicinal” here is rendered by Brunner 1973, p. 350 as “toxic,” but *pharmakôdês* simply means “of the nature of a *pharmakon*” (*LSJ s.v.*), while *pharmakon* itself designates a “drug, whether healing or noxious” (*LSJ s.v.*); since “drug-like” could be misleading in the context of treatment with cannabis, I have chosen “medicinal.”

Again the influence of contemporary theory is evident in the reference to the “warming” quality of cannabis, naturally associated with its “drying” quality; this probably alludes not to a “warm” feeling felt by the user (Brunner 1973, p. 351) but to the ability of the seed to maintain the body’s warmth, the prerequisite of life. But this passage also constitutes our best evidence for the recreational use of cannabis through consumption of the seeds (denied at Brunner 1973, p. 355), which we last saw mentioned in Ehippus in the 4th century BCE: surely it was for the intoxicating effect, and not for the unpleasant taste or for the stomachaches or headaches, that they were eaten. Galen confirms this intoxicating effect a little later in the same work (Galen 1821, VI.550) when he writes that the seed of agnus-castus doesn’t “touch the head” as cannabis seed does.

One “paramedical” use worth mentioning is as a mosquito repellent (cf. Brunner 1973, p. 349). An ancient work on farming claims that “with cannabis spread below, mosquitoes will do no injustice to the one in the bed” ([Anon.] 1895, *Geoponica* 13.11.9), while elsewhere it promises that “if you put a blooming sprig of fresh cannabis by you when going to bed, mosquitoes won’t touch you” ([Anon.] 1895, *Geoponica* 13.11.4). Whether or not these actually work, they might reflect an observation by ancient hemp-farmers that insects by and large tend to avoid the plant.

A work falsely attributed to Galen called *De remediis parabilibus* (“On ready remedies”) offers cannabis leaves in a treatment against nose-bleeds (Galen 1821, XIV.548): “Dry some cannabis leaves, grind them and put them into the *rhothôn*” (the suggested alternative is to set fire to a piece of linen, dip it in “sharp vinegar,” and insert it into the nostril!). Unfortunately, *rhothôn*

does not occur elsewhere and is not found in any Greek dictionary I have consulted, but one assumes that it designates the nostrils.

Cannabis seed appears twice in remedies for tapeworms. One that is also attested for horses (see Appendix II) turns up in “On ready remedies” (*Opera omnia* XIV.515):

Καννάβεως σπέρμα ξηρὸν κόψας καὶ σήσας, ὕδατι μίξας καὶ χυλώδες ποιήσας καὶ ῥάκει καθαρῶ ἀποπιάσας δὸς πιεῖν.

Chop and sift dry cannabis seed, mix with water and make *khylos*-like, and press through a clean rag and administer.

As *sperma* shows, this involves mature seed rather than the green seed used to make the *khylos* for earaches; it is not clear, however, what the author meant by “*khylos*-like” (a brief period of steeping before filtering?). Archigenes fr. 17 offers the second recipe, involving a drink prepared from a number of seeds, including cannabis.

Greek medicine as a form of scholarly inquiry effectively ended with Galen, and later writers, for the most part, simply rehash and recycle what we have already found.

In the 4th century, Oribasius repeats in one passage (Oribasius 1933, *Ad Eunapium* 2.1) what Galen says in “On the temperaments and properties of simple medications” about the seed drying up the semen; in another (Oribasius 1933, *Collectiones medicae* 1.32) he abbreviates Galen’s comments in “On the properties of foods” about their indigestible quality and their warming effect. In the 6th century, Aëtius writes as follows (Aëtius 1935, *Iatrica* 1.178):

Καννάβεως ὁ καρπὸς δύσπεπτός τέ ἐστι καὶ κεφαλαλγῆς καὶ κακόχυμος· εἰ δὲ καὶ φρυχθείη καὶ οὕτως ἄπτεται τῆς κεφαλῆς τῶ θερμαίνειν ἱκανῶς, ἀτμὸν ἀναπέμπων ἐπ’ αὐτὴν θερμόν τε ἅμα καὶ φαρμακώδη· τῶ δὲ ξηρὰν ἔχειν τὴν κρᾶσιν καὶ ἄφυσον εἶναι ξηραίνει τὴν γονήν.

The fruit of cannabis is hard to digest, headache-inducing, and bad-tasting; even if it is roasted it intoxicates by warming the head sufficiently, sending up a warm medicinal vapor toward it; by having a dry and non-flatulent temperament it dries the semen.

This is more or less what Galen wrote in “On the properties of foods,” but perhaps a little confused; the explicit connection made here between the

non-flatulent property of the seed and its ability to dry may be based upon a misunderstanding of Galen and his use of “both . . . and” (Galen probably meant that the seed was, on the one hand, non-flatulent and, on the other, drying to such an extent that it dried up the semen, not that both the non-flatulent and drying properties dried up the semen). Finally, in the seventh century, Paulus of Aegina (Paulus Aegineta 1921-1924, *Epitome medica* 7.3.10) repeats more or less word for word the comments from Galen’s work “On the temperaments and properties of simple medications.” Late Roman writers like Marcellus Empiricus and pseudo-Theodorus closely reflect what we have already seen in Greek writers, though they sometimes add an outlandish novelty or two (cf. Brunner 1973, p. 354).

Outside these specific accounts, cannabis seed regularly appears in lists of foods with various qualities: non-flatulent foods (Oribasius 1933, *Collectiones medicae* 3.22.1, 15.1:10.9, *Synopsis ad Eustathium filium* 4.21.2, *Ad Eunapium* 1.38.1; Aëtius 1935, *Iatrica* 2.258), foods with a drying effect (Oribasius 1933, *Collectiones medicae* 14.23.1, 15.1:10.9, *Synopsis ad Eustathium filium* 2.13.1; Aëtius 1935, *Iatrica* 2.209), foods with a warming effect (Oribasius 1933, *Collectiones medicae* 3.31.2, *Synopsis ad Eustathium filium* 4.31.2), and foods that harm the head (perhaps because of the headaches said to be associated with eating it; [[Anon.] 1841] *De alimentis* 31, under the designation *kannabokokka*; Oribasius 1933, *Collectiones medicae* 3.21.3, *Synopsis ad Eustathium filium* 4.20.1). Some writers also record it as a powerful thinning agent, i.e., as having the ability to thin the body’s humors (Oribasius 1933, *Collectiones medicae* 3.2.4 = *Synopsis ad Eustathium filium* 4.1.3 = *Ad Eunapium* 1.18.3, “among agents that thin powerfully enough to be medicinal is the seed of rue and of cannabis”; Aëtius 1935, *Iatrica* 2.240 gives a substantially identical text). Under the compound name *kannabosperma* (“cannabiseed,” as it were), it also appears once in a list of foods that produce “sticky” humors ([Anon.] 1840 *De cibis* 18), specifically in a sub-list of foods that also produce “cool” humors.

The imitative quality of later Greek medical writing has one advantage for us: that later writers can sometimes preserve knowledge that has otherwise been lost. In the case of cannabis seed, though we have seen numerous references to the ability of the seed to suppress semen when consumed in quantity, we have seen none that has related this explicitly to a medical use. Fortunately, a passage of Aëtius on the treatment of “gonorrhoeas” or involuntary discharges of sperm shows us the medical use that exploited that drying effect (Aëtius 1935, *Iatrica* 11.33):

Γονόρροια μὲν οὖν τῶν σπερματικῶν ἀγγείων ἐστὶ πάθος, οὐ τοῦ αἰδοίου. ὀδύνην μὲν οὐκ εἴωθε λίαν ἐργάζεσθαι τὸ πάθος, αἰδιδίαν δὲ οὐ τὴν τυχοῦσαν καὶ συγχυσμὸν παρέχει, ἀδιαλείπτως ἐκκρινόμενου τοῦ σπέρματος ἀπροαιρέτως. Ἀποτελεῖται δὲ ἐνίοτε καὶ ἐκ ῥευματισμοῦ τῶν σπερματικῶν ἀγγείων, ἔστι δὲ ὅτε καὶ σατυριάσεως προηγησαμένης ἐπιγίγνεται ἡ γονόρροια. Συμβαίνει δὲ τὸ πάθος τοῖς προηβῶσι μᾶλλον, τοῖς περὶ τὸ τεσσαρεσκαιδέκατον ἔτος· ἤδη δὲ καὶ ταῖς ἄλλαις ἡλικίαις. Ἔστι δὲ τὸ ἐκκρινόμενον σπέρμα ὕδαρὲς λεπτὸν δίχα προθυμίας τῆς περὶ τὴν συνουσίαν, τὰ πλεῖστα μὲν ἀναισθητήτως, ἔστι δὲ ὅτε καὶ μετὰ τινος ἡδονῆς· καταφθείρεται δὲ αὐτοῖς ἡρέμα τὸ σύμπαν σῶμα ἰσχαινόμενον, ἰδίως δὲ τὰ κατὰ τὴν ὀσφύν. Παρέπεται δὲ καὶ ἀτουία πολλή, οὐ διὰ τὸ πλῆθος τοῦ ἐκκρινόμενου, ἀλλὰ διὰ τὴν κυριότητα τῶν τόπων. Οὐ μόνον δὲ ἀνδράσιν, ἀλλὰ καὶ γυναιξὶ τοῦτο συμβαίνει, καὶ ἔστιν ἐπὶ τῶν γυναικῶν δυσσπάλλακτον. Θεραπεία δὲ καὶ τούτων κοινὴ ἢ ἐπὶ παντὸς ῥευματισμοῦ παραλαμβανομένη. Πρῶτον μὲν οὖν ἐπὶ ἡσυχίας καὶ ὀλιγοσιτίας καὶ ὑδροποσίας τηρεῖν· εἶτα δὲ καὶ σκέπειν τὴν ὀσφύν καὶ τὸ ἐφήβιον ἐρίοις βεβρεγμένοις οἴνω καὶ ῥοδίνω ἢ οἰνανθίνω ἢ μηλίνω· οὐκ ἄθεται δὲ οὐδὲ σπόγγοι, ὄξυκράτω δεδευμένοι· ταῖς δὲ ἐξῆς καὶ καταπλάσμασι τοῖς διὰ φοινίκων, μήλων, ἀκακίας, ὑποκιστίδος, οἰνάνθης, ῥόδου ἐρυθροῦ, καὶ τῶν ὁμοίων, ἐγκαθίσμασι τε χρῆσθαι στυπτικοῖς, ἀφεψήμασι σχίνου, βάτου, μυρσίνης καὶ τῶν παραπλησίων, ἐψομένων ἐν οἴνω αὐστηρῶ ἢ ἀκράτω ἢ κεκραμένω. Τροφαῖς δὲ χρῆσθαι δυσσφάρτοις τε καὶ δυσμεταβλήτοις καὶ ἀναξηραντικαῖς, διδόναι τε αὐτοῖς σὺν τῷ ποτῷ καὶ ταῖς τροφαῖς τοῦ ἄγνου τὸ σπέρμα καὶ τὸ τῆς καννάβεως, καὶ μᾶλλον πεφρυγμένα, καὶ τοῦ πηγάνου τὸ σπέρμα καὶ τὰ φύλλα, καὶ τῆς θριδακίνης τὸ σπέρμα καὶ τοὺς καυλοὺς, καὶ τῆς νυμφαίας τὴν ῥίζαν. Πίνειν δὲ κατὰ ἐκάστην ἡμέραν ἀντὶ τοῦ κοινοῦ ὕδατος ὕδωρ ἐν ᾧ σίδηρος πλειστάκις ἐναπεσβέσθη. Ἔδωκαν δὲ τινες τοῖς γονορροικοῖς πίνειν ἀλικακκάβου ῥίζης τὸν φλοιὸν μετὰ ὕδατος, καὶ οὐκ ἂν εἴη ἀνοίκειον ἀποπειρᾶσθαι ποτε καὶ τούτου.

So a gonorrhoea is a condition of the spermatic ducts, not of the penis. The condition generally does not cause much pain, but it does offer an unusual deformity and effusion, as the seed is incessantly being discharged involuntarily. Sometimes a gonorrhoea is brought about by a discharge of the spermatic ducts, sometimes it is an aftereffect of a preceding satyriasis. The condition happens most to the young, around the age of fourteen, though at other ages as well. The seed is discharged in a watery and thin condition, unconnected with any desire for sex, mostly without being no-

ticed, though sometimes with a certain pleasurable sensation. The entire body, but especially the areas around the loin, is gradually wasted and withered by it. Significant weakness follows, not because of the quantity of the discharge but because of the sovereignty of these areas. This happens not only to men but to women as well, and in the case of women it is difficult to cure. The general treatment of these conditions is the one for every kind of discharge. First of all, then, keep the patient rested, eating little and drinking only water; then also cover the loin and pubes with wool moistened with wine and attar of rose or grape-bloom or quince (sponges dipped in diluted sour wine are not to be rejected); in the days that follow use poultices from dates, quinces, acacia, hypocist, grape-bloom, red sumach and the like, and astringent sitz-baths, decoctions of mastich, bramble, myrtle and similar things, boiled in dry wine, either unmixed or mixed. Use foods that are hard to digest and assimilate and are drying, and give to them together with the drink and food the seed of agnus-castus and of cannabis, preferably roasted, and the seed and leaves of rue, as well as the seed and stalks of wild lettuce and the root of the water-lily. Every day, instead of ordinary water, some give water in which steel has been quenched often, some the bark from the root of the winter-cherry.

Despite the comment that this “affliction” can occur in women as well (perhaps Aëtius was thinking of vaginal secretions, though they are obviously—to us, at least—not discharges of semen), it is clear that Aëtius is discussing principally wet-dreams and nocturnal emissions in teenage boys. This phenomenon evidently caused great concern to ancient physicians; the passage quoted above is not even the whole of Aëtius’ discussion of its treatment, but one can see that it involves plenty of rest, a restricted intake of food, and abstention from beverages other than water (obviously the physicians who administered water from the blacksmith’s that had been used for quenching hot steel were engaging unconsciously in a sort of homoeopathic magic). But the logic of Aëtius’ treatment is inescapable: these discharges represent leakage from the spermatic ducts, and so the drying quality of cannabis seed can be invoked to dry up those leaks.

A passage in Oribasius (Oribasius 1933, *Ad Eunapium* 4.107.2) has the fruit of “wild” cannabis used in this treatment, but he is very probably mistaken; his language reflects exactly what other authorities say about the effect of cannabis seed (“if drunk in quantity it dries up the semen”), and no other medical authority except the *Herbarium* of ps.-Apuleius refers to any use at all for the seed of “wild” cannabis. That Oribasius writes of the fruit being “drunk” rather than eaten is also likely to be an error, unless he was simply thinking about the seeds being taken together with a beverage.



This survey of the medical use of cannabis has yielded several weakly attested uses: a preparation of dry seed against tapeworms, the dried, ground leaves against nosebleed. But it has also shown that there were two principal uses, attested again and again in our major medical authorities: an infusion of the green seeds used against earaches, and consumption of the seeds in treating nocturnal emissions. For a variety of reasons, it is difficult to evaluate the effectiveness of these treatments, most obviously because of the impossibility of experimenting with the precise strains that were used in antiquity, less obviously because we cannot always be certain about the method of preparation (for example, no-one tells us whether the *khylos* used in the ears was prepared with water, with wine, or even with oxymel). It may well be, however, that the lack of a technology to permit smoking cannabis meant that the ancients were denied the opportunity to make the most effective use of the plant's psychoactive and analgesic properties.

Finally, one section of a genuine work of Galen, *De victu attenuante* ("On the thinning regimen," Galen 1923, 29), hints at some controversy over the medical use of cannabis seed. Galen is making the point that some foods exercise such a powerful effect on the body that they are little short of the properties of true medicines. His first example is the seed of the rue, followed by the seed of the agnus-castus (which we've seen associated elsewhere with the medical use of cannabis), followed by cannabis seed, which he says is not only medicinal but also headache-inducing, so that "one would properly use them [i.e., the seeds of these three plants] for only one purpose, when one chooses to purify the blood through the urine." Since no other source connects cannabis seed with purification of the blood (or with the urine), it is not clear what Galen had in mind here. What does seem certain is that his words reflect a perception that there was such a thing as an *improper* use for the seed. It seems unlikely that Galen was thinking of the poorly attested use of cannabis seeds against tapeworms or even of the much better attested use of a *khylos* from them against earaches. In the absence of any other attested medical use of cannabis, this leaves the drying up of semen as his most likely target; since we know that Galen was aware that eating the seeds was not only unpleasant but could lead to intoxication as well, it is perhaps not unreasonable to suspect that the controversy underlying his words was precisely over the prescribing of cannabis seeds for the treatment of nocturnal emissions in teenage boys, inspired by observations of undesirable side-effects from administering the large quantities of seed that were required to produce the "drying" effect. It is worth noting that, when Aëtius goes on to offer a specific recipe for an antidote to nocturnal emissions, it contains the seed of agnus-castus but not of the more intoxicating cannabis (see Galen, quoted above, for agnus-castus as a non-intoxicating alternative to cannabis).

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## APPENDIX I

Passages Discussing “Wild” Cannabis Possibly Misunderstood  
as Discussing “Domesticated” Cannabis:**A. Dioscorides, *Materia medica* 3.149** (cf. Oribasius, *Collectiones medicae* 11.kappa.3):

ἡ δὲ ἀγρία κάνναβις ῥαβδία φέρει ὅμοια τοῖς τῆς πετέλας, μελάντερα δὲ καὶ μικρότερα, τὸ ὕψος πῆχεως· τὰ φύλλα ὅμοια τῇ ἡμέρω, τραχύτερα δὲ καὶ μελάντερα, ἄνθη ὑπέρυθρα, λυχνίδι ἐμπερῆ, σπέρμα δὲ καὶ ῥίζα ὅμοια τῇ ἀλθαίᾳ. δύναται δὲ ἡ ῥίζα καταπλασθεῖσα ἐφθῆ φλεγμονᾶς παρηγορεῖν καὶ πῶρους διαχεῖν· καὶ ὁ ἀπ’ αὐτῆς δὲ φλοιὸς εὐθετεῖ εἰς πλοκὴν σχοινίων.

Wild cannabis bears shoots similar to those of the elm, but darker and smaller, the height of a forearm; the leaves are like the domesticated variety, but rougher and darker, the flowers reddish, similar to the toad-flax, the seed and root like the wild mallow. The root when boiled and used as a plaster can ease inflammations and disperse chalk-stones; and the inner bark from it serves for making ropes.

**B. Dioscorides, *Euporista* 1.229**

πῶρους δὲ τοὺς ἐπὶ ποδαγρικῶν καὶ συστροφᾶς τῶν νεύρων λύει ...  
κάνναβις ἀγρία καταπλασθεῖσα ...

Cures for chalk-stones in the gouty and for twistings of the sinews include . . . a plaster of wild cannabis.

**C. Oribasius, *Synopsis ad Eustathium filium* 3.29.1** (cf. Aëtius 1935, *Iatrica* 15.7):

Ἄδαμαντίου πρὸς μελικηρίδας καὶ τὰ ὅμοια  
Κηροῦ β', τερεβινθίνης β', λεπίδος χαλκοῦ β', νίτρου α', θείου ἀπύρου α',  
καννάβεως ἀγρίας ῥίζης ξηρᾶς λε' (εἰ δὲ μή, ἀριστολοχίας στρογγύλης τὸ  
αὐτό), κόπρου περιστερᾶς λε', ἐλαίου παλαιοῦ α'. ἐναφέμει τῶ ἐλαίῳ τὰς  
ρίζας.

Adamantius' [remedy] against melicerides and the like:

Two measures of wax, 2 of terebinth, 2 of bronze chips, 1 of nitre, 1 of native sulphur, 35 of dry root of wild cannabis (otherwise the same amount of round aristolochia), 35 of pigeon-droppings, 1 of old oil. Boil down the roots in the oil.

## APPENDIX II

### Cannabis in Veterinary Medicine

According to a collection of horse-remedies known as the "Berlin *Hippiatrica*" ([Anon.] 1924, 96.26), the chopped leaves can be used to dress a wound: first some vinegar and pitch are brought to a full rolling boil, then wax, mustard, wheat-chaff, and roasted pine-resin are added, and the resulting mixture (presumably cooled) is applied liberally, then chopped cannabis leaves and grass trimmings are put on top before the wound is bound. This treatment evidently does not rely upon any chemical properties of cannabis leaves but simply uses them (no doubt as a waste product from cultivation for rope-making) as a clean and readily available dressing.

Another collection, the "Cambridge *Hippiatrica*," offers a recipe for the treatment of tapeworms which is identical to the one cited above from pseudo-Galen "On ready remedies" ([Anon.] 1924, 70.10).

Finally, a formula found in both the "Cambridge *Hippiatrica*" ([Anon.] 1924, 17.3) and in the *Geoponica* ([Anon.] 1895, *Geoponica* 16.15) specifies the use of the ash of cannabis (though we are not told whether this is from burning the stems or the leaves or even the root) combined with honey and "old urine" as a salve for wounds of the lower back (for the "back-biting" of horses and the use of cannabis to control it, cf. Brunner 1973, p. 354, with n. 40).