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MALABATHRON (ΜΑΛΑΒΑΘΡΟΝ) IN ANCIENT AND EARLY BYZANTINE MEDICINE AND CUISINE

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SUMMARY

This study of the history and applications of μαλάβαθρον (malábathron)*, known as tejpat, suggests that the spice had an appreciable effect on Mediterranean medicine and cuisine. A significant increase in the interest in the plant occurred in the 1st c. BC, though extant information on the dietetic-pharmacological uses of tejpat dates only to the 1st c. AD, and appears in Dioscorides' De materia medica.*
Malábathron *never became a common medicament, nor a cheap culinary ingredient. Nevertheless, it was regularly used in medical practice, but only in remedies prescribed to the upper social classes. In Roman cuisine it was also an ingredient of sophisticated dishes. In De re coquinaria it features in twelve preparations.*

Sources

Any research into the role of μαλάβαθρον (*malábathron* – tejpat in English) in antiquity and the early Middle Ages has to be based on a wide range of sources. Only sources of primary importance, how-

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ever, are listed and briefly here. Three texts of the 1st c. AD should definitely be mentioned for the study of the provenance and origins of tejpat's presence in the Mediterranean: the anonymous *Periplus Maris Erythraei*[1], *Historia naturalis* by Pliny the Elder[2], and *De materia medica* by Pedanius Dioscorides of Anazarbus[3]. Thanks to his in-depth expertise in ancient pharmacopoeia[4], Dioscorides included in his work the first extant full pharmacological characterisation of the plant in addition to a great deal of information concerning its various therapeutic applications, thus creating the first comprehensive survey on *malábathron*. His data were later reproduced by Galen of Pergamum (2nd/3rd c. AD)[5], who was also interested in the utilization of the plant for the treatment of his wealthy Roman patients. The physician of Pergamum himself took advantage of many of the treatises penned by his predecessors[6] in order to prepare his own medical concoctions. The early Byzantine doctors Oribasius (4th c. AD)[7], Aetius of Amida (6th c. AD)[8] and Paul of Aegina (7th c. AD)[9] showed an analogous interest in the therapeutic properties of tejpat. Relying mainly on ancient authorities in their writing about *malábathrum*, they therefore continued to see it the way Dioscorides and Galen used to do. Although some of the above-mentioned texts preserve informative passages on the culinary applications of the plant, the main corpus of information on the subject is included in the Latin cookbook known as *De re coquinaria*, whose final version is usually dated to the 4th c. AD, even though its origins are traditionally attributed to the Roman gourmet named Marcus Gavius Apicius (1st c. AD)[10].

Identification

Malábathron is identified as the leaves of *Cinnamomum tamala* (Buch.-Ham.) T.Nees & C.H.Eberm. Its common English name is tejpat[11]. However, it should be borne in mind that Berthold Laufer came to a different conclusion and maintained that the term *malá-*

bathron referred to patchouli, that is *Pogostemon cablin* (Blanco) Benth[12]. His thesis is not considered valid in the current science.

Names of the plant in the ancient literature under consideration

The Greek name *malábathron* is traditionally considered to be a borrowing from the Sanskrit term *tāmalapattra*[13]. Since it was the leafage of the tree of *Cinnammomum tamala* that was used for therapeutic purposes by Greek physicians, medical authors often used the generic term φύλλον (*fýllon*) to refer to the plant[14]. Two examples will suffice here to prove this. Galen quoted a recipe for a universal medicament first composed by Polyarchus[15], which included φύλλα μαλαβάθρου (*fýlla malabáthrou*)[16]. A remedy called πολυάρχειον (*polyárcheion*), in turn, can be found in Oribasius' *Eclogae medicamentorum,* where the term *malábathron* is substituted by the noun *fýllon*[17]. The ingredients and uses of both medicines are otherwise almost identical. There is no doubt that both authors described the same medicament, and that *malabáthron* was identified as *fýlla malabáthrou*, meaning "*malábathron* leaves", in Polyarchus' formula, and as *fýllon*, i.e. "leaf", in Oribasius' work. Furthermore, in Aetius' medical encyclopaedia, there is an aromatic oil called φύλλινον ἤτοι μαλαβάθρινον (*fýllinon* or *malabáthrinon*). Its formula included a whole range of ingredients among which we can read *fýllon*[18], without the term *malábathron*. Nevertheless, as the very title of the formula suggests that *fýllinon*[19] and *malabáthrinon* are the same product, we can safely conclude that the name of this μύρον (*mýron*) was created from the word *fýllon*, which in this case definitely refers to *malábathron*.

In Latin we come across two variants of the Latinised Greek name of the plant, namely *malabathrum*[20] and *malobathrum*[21]. Andrew Dalby claims that also the Romans used the term "leaf", which reads in Latin *folium*, as an equivalent of *malabathrum*[22], and that this usage is reflected in the terminology used in *De re coquinaria*[23]. However,

Dalby's thesis seems to be contradicted by the fact that there are four recipes in the work[24] in which the terms *folium* and *malabathrum* appear side by side, suggesting that they refer to different ingredients. This issue was discussed by Christopher Grocock and Sally Grainger, who renounced to ultimately solve the problem[25]. As staunch supporters of Dalby's opinion, we will examine only two among the many arguments in favour of the identity of the two terms in *De re coquinaria*. A κόνδιτον (*kónditon*) mentioned by Oribasius[26] appears under the name *conditum paradoxum* in *De re coquinaria*, book I[27]. Both formulae use the terms indicating "leaf", that is *folium* in the Latin text, and *fýllon* in the Greek one. Since, as we have proved, Oribasius uses the term *fýllon* as a substitute of *malábathron*, it is highly probable that the term *folium* in *De re coquinaria* refers to *malábathron* as well, especially because it was used there in the same context as in Oribasius' prescription in *Eclogae medicamentorum*. This interpretation will become even more convincing if we note Pliny's remark on a positive effect of adding *malábathron* to wine, which suggests that tejpat was a frequent ingredient of spiced wines[28]. The wine identified as *apsinthium Romanum*[29] in *De re coquinaria* will provide a further confirmation of our interpretation. Its recipe can be found in the book I of the Latin work, while its Greek equivalent (ἀψινθάτον - *apsintháton*) appears first in Oribasius' works[30] and later in Aetius' medical encyclopaedia[31]. It is unquestionable that, in the Latin collection, the term *folium* occurs as an equivalent of the Greek *fýllon* in both medical treatises. Neither can one doubt that it denotes *malabathrum* if the Greek term refers to tejpat leaves.

Origin of malábathron according to classical literature

One of the factors of the introduction of new plants into the Mediterranean region was intentional import of products collectively referred to as spices. Even though they usually could not be acclimated in the Mediterranean area, these plants had a marked in-

fluence on the lives of people in this region, as they contributed to develop their gustatory preferences and played a significant role in medicine. It is not surprising that these products were abundantly studied in medical treatises, which described the therapeutic and nutritional properties of the substances administered by physicians on the basis of contemporary theories[32], and the ways of administering those remedies. The works of the physicians listed in the section about sources constitute a valuable *corpus* of information from which the role of particular food products, including the substances obtained from exotic plants, can be determined. *Malábathron* is one of such imported drugs that became a long-term component of Greek and Roman life.

Even though the bark of other cinnamon trees described in Greek as κιννάμωμον (*kinnámomon*)[33] and κασσία (*kassía*)[34] seem to have reached the Mediterranean area before the 7th c. BC and was regularly used in the 6th c. BC[35], dried leaves of tejpat seem to have been used in perfumes, medicine, and cuisine only much later[36]. It is difficult to establish a date (or even a period) when they started to be used. However, if we consider that the wine recipes composed by the Coan physician Phylotimus[37] contained this ingredient, we can hypothesize that *malábathron* was used in the making of therapeutic wines at least in the 4th c. BC[38]. On the basis of ancient literature we can establish that tejpat became popular in the early Roman Empire. At that time, indeed, it appeared in poetry as one of the luxurious products imported for use in cosmetology[39], cuisine[40], and even burial ceremonies[41]. Last but not least, the first medical treatises that include *malábathron* in prescriptions date to the same period. Increased interest in tejpat leaves in that time suggests that the product was already known earlier, and probably gained popularity in the 1st c. BC at the latest, possibly as a result of Pompey's conquest of the East (65–63 BC) and Augustus' annexation of Egypt (30 BC)[42].

Greeks and Romans had little knowledge of the provenance of *malábathron*. In the 1st c. AD, Dioscorides stated that the plant from which the fragrant leaves were obtained grew in distant India. He also noted that some people erroneously considered *malábathron* to be the green parts of spikenard[43], which is another important aromatic plant introduced to the Mediterranean from exotic lands. In fact, spikenard had been imported to the Roman World long before tejpat leaves, thus being certainly more familiar to the readers of Dioscorides' treatise[44]. According to the author, *malábathron* grew on the Indian swamplands, with its leaves floating on the surface of water. The leafage was gathered and strung on a linen thread to dry; dried leaves were then stored and sold. We also learn from Dioscorides that during the summer heat, when the water of the swamps where *malábathron* grew dried out, the ground was set on fire. If it had not been done, *malábathron* plants would not burst with such lush (and precious) leafage[45].

Pliny mentioned Syria and Egypt as the main places where the plants providing *malábathron* were grown and the costly essential tejpat oil was produced[46]. However, the Roman naturalist also mentioned that those who searched for the best kind of this plant should go to India[47]. It is worth noticing that the story about the methods of growing and harvesting Indian *malábathron* contained in his *Historia naturalis* are the same as in Dioscorides' *De materia medica*[48].

The Indian origin of *malábathron* seems to have been common knowledge. In the 7th c. AD, Theophylact Simocatta[49] used the term φύλλον Ἰνδικόν (*fýllon Indikón*) among a list of the most important and valuable aromatic plants of Indian origin, together with pepper, *kassía* and costus. He identified them collectively as Ἰνδικαί καρυκείαι (*Indikaí karykeíai*)[50], and wrote that they were handed as a tribute to the Avars by the Roman general Priscus, who fought on behalf of emperor Marcian[51]. However, it should be mentioned that a Syrian origin was also attributed to tejpat leaves and that such ori-

gin might have been widespread as well, as Horace[52] referred to this ingredient as *malobathrum Syrium*[53] in one of his odes.

Yet another source from the 1st c. AD, namely *Periplus Maris Erythraei*, stated that the aromatic leaves originally grew even further away. Tejpat leaves were collected by the inhabitants of these far regions and brought by them to India; there, they were formed into balls of three basic sizes[54], and eventually threaded onto plant fibres. Only then such "chains" were transported to Indian ports, where they were probably taken over by the merchants and shipped further to the west[55]. This account seems highly plausible, because tejpat trees are still growing in the Sichuan province of southwestern China, and there is no reason to think that it was not the case in antiquity. On this basis, we can reasonably assume that Syria and Egypt (mentioned by Pliny as the regions of origin of *malabathrum*) were not the centres of tejpat cultivation, but the places from which this aromatic plant was imported to the heart of the *Imperium Romanum* and in which the valuable *malábathron* oil was produced.

The users of malábathron

Malábathron leaves were very expensive. As we learn from Pliny, one pound of the product costed sixty *denarii*, and the price of the oil made of it could reach even four hundred *denarii*. Numerous mentions in medical treatises unnoticed so far confirm the exquisite character of this ingredient. Galen's works are significant from this viewpoint, not only because he listed some formulae for medicaments made of *malábathron* in *De compositione medicamentorum per genera*, but also because he added remarks on the status of the patients who used the remedies he composed and prescribed.

One of such personal notes is a thought-provoking anecdote about a wealthy Roman citizen in the capital of the empire. This personage owned a slave who happened to develop some kind of a cancerous affection. The affluent Roman tried to treat him as he could, but with

no avail. He thus asked Galen to take care of his servant. Since the physician succeeded in curing the boy, his wealthy patron asked for the prescription of the remedy that had proven to be so efficacious[56]. When he discovered that the formula contained only cheap ingredients, he refused to accept the prescription, as he found it not sophisticated enough for a person of his status. Sometime later, the same rich Roman citizen had another sick slave who suffered from some injury of the cartilaginous tissue in the ear. Again, the owner tried to treat him in the way he was familiar with, but without success. As he appreciated Galen's expertise, he gave instructions for the boy to be brought to the physician's house, and after some time he learnt that the patient was cured. Again, when he received the prescription for the φάρμακον (*fármakon*) that was so efficacious, he did not accept it because of its lack of refinement. In order to convince this diffident client of the efficacy of his medicines made of common ingredients, Galen showed to the man his former patients who were cured from serious injuries by means of administering to them unsophisticated medicaments. This argument was only partly persuasive, because the wealthy man still could not accept the simple formulae prescribed by Galen. To satisfy his need for sophistication, the skeptical Roman asked the physician to compose prescriptions for remedies that would not only cure, but would also smell nice and be appropriate for a person of high social standing.

Galen provided the affluent slave owner with several formulae[57]. The first remedy was made of cinnamon, dittany of Crete[58], *Teucrium marum* L., salvia, and marjoram. We should add here that Galen confessed that he used the last ingredient only because he knew from his own experience that it was difficult to obtain it in Rome, and therefore very expensive[59]. Galen provided three more variants of the medicament, the first with ὀπὸς Κυρηναῖος (*opós Kyrenaíos*)[60], the second with spurge and *opós*[61], and the third with myrrh oil[62]. Moreover, the physician mentioned that he advised patients with

open wounds to use remedies containing pharmaceutical wax (κηρός μυρεψικός - *kerós myrepsikós*), oils identified by the Romans as σπίκατον (*spíkaton*)[63], and *foulíaton* (φουλίατον)[64], as well as zinc oxide (πομφόλυξ - *pomfólyx*). This ointment could also be made of Tyrrhenian wax, with spikenard, cardamom, *malábathron* leaves, and zinc oxide[65].

This story is very interesting to ascertain the place of *malábathron* in medicine. It shows that the plant was listed among very expensive ingredients, suggesting that their high price resulted from the difficulty to obtain them. The very title of the chapter where the anecdote is told explicitly refers to expensive medicines[66]. It is thus obvious that such medicaments were prescribed only to wealthy patients (for example from Rome), whereas other people[67] were treated with remedies made of easily available, therefore cheap, ingredients[68]. The story reveals that treatments depended on social divisions, and hence physicians (who worked with patients of various backgrounds) adapted their therapeutic strategies to social groups[69].

The therapeutic applications of malábathron

According to Dioscorides *malábathron* is credited with the same properties as spikenard, thus potentiating the effect of other substances administered for medical purposes. It also has a stronger diuretic effect than spikenard, and is better for the stomach. Moreover, it helps to cure inflammations of the eyes, especially if it is boiled in wine, ground, and rubbed onto the ailing place. It was also put under the tongue to make the breath pleasant[70].

Even though Galen knew Dioscorides' treatise, he did not say much about *malábathron* in *De simplicium medicamentorum temperamentis ac facultatibus*. He only stated that the effects of using tejpat are similar to those attributed to spikenard[71]. Through the chapter on spikenard we can deduce that tejpat was considered to have warming and drying properties characterised by a slight astringency, both

spikenard and *malábathron* having some warming spiciness and a slightly bitter flavour. Galen also states that both are suitable for the treatment of liver and stomach, and that they increase urine flow, cure stomach ache, dry gastric rheumatisms (as well as those affecting other internal organs) and the excess of juices in the head and the chest when they are administered in beverages or externally as compresses[72].

As the analysis of *malábathron* in Dioscorides and Galen are not dissimilar, it is safe to go back to the same, uniform tradition[73]. Significantly Oribasius[74], Aetius of Amida[75], and Paul of Aegina[76] do not offer distinctly different information.

Among the many therapeutic indications of tejpat, we can stress the following[77]. It was believed to reduce muscular tension and to have analgesic and sedative properties. Dioscorides wrote that, when cooked in wine and applied onto the nostrils, it helped people to fall asleep[78]. Later physicians shared this opinion. Oribasius listed *malábathron* among the ingredients of the most sophisticated remedies from the group of ἀνώδυνα (*anódyna*), or, to be more specific, among the so-called antidotes (ἀντίδοτοι - *antídotoi*)[79], to which the formula of a remedy called *antídotos he paionía* (ἀντίδοτος ἡ παιωνία) belonged[80]. *Malábathron* appears also among the ingredients of many aromatic analgesic medicaments, i.e. ἄκοπα (*ákopa*)[81], which were referred to under the generic name of μυράκοπα (*myrákopa*)[82]. One of the prescriptions for such remedies (quoted by Galen) came from the works of Andromachus[83], and contained ἀμμωνιακόν (*ammoniakón*) resin[84], pine resin, spurge[85], the ointment called μάγμα μαλαβάθρου (*mágma malabáthrou*)[86], tejpat leaves, and φουλίατον (*foulíaton*) oil[87].

In Dioscorides' *De materia medica*, tejpat is already used in eye treatment[88]. In the same treatise *malábathron* leaves are cooked in wine and applied to the forehead to help with problems generally described as inflammation of the eyes[89]. Galen included *malábathron*

leaves in the list of ingredients of a medicament used for the prevention of ὀφθαλμίαι (*ofthalmíai*)[90]. Galen's medicine was made of Phrygian stone prepared in a special way[91], burnt copper, white pepper, tejpat leaves, powdered antimony, and balm of Mecca. The remedy was applied onto the eyelids[92]. *Malábathron* appears also in the list of the ἀρωματικὰ φάρμακα (*aromatiká fármaka*) used to ease the so-called "itching irritations" of this part of an eye (ψωρώδης διάθεσις - *psoródes diáthesis*)[93]. It was certainly considered to be efficacious, as Aetius of Amida[94] prescribed remedies containing tejpat, *kassía*, and ἄμωμον (*ámomon*), i.e. Nepal cardamom, to treat ocular afflictions, including pruritus[95]. Galen also offers a formula for a mixture called μαλαβάθρινον (*malabáthrinon*) to be administered in the case of eye pain. It included zinc oxide called καδμεία [γῆ] (*kadmeía*)[96], acacia resin[97], copper that was burnt and rinsed, opium, buckthorn[98], myrrh, *malábathron*, spikenard, castoreum, aloe, κόμμι (*kómmi*) resin[99], and numerous other ingredients[100]. This medicine appears in the 7th c. AD in Paul of Aegina's medical encyclopaedia[101].

Malábathron helped to keep hair in good condition, something that was one of the most significant aesthetic and health problems in the Roman Empire. Galen quoted Soranus[102] and his formulae for medicaments for ἀλωπεκίας (*alopekías*), for another type of baldness called φαλάκρωσις (*falákrosis*), and also chin and eyebrow hair thinning. These remedies were made of wool, sweet flag and worm fern roots[103] burnt together with many other ingredients. Ladanum (λάδανον, *Cistus* spp. resin) and myrrh were first mixed with wine, then mature olive oil, cedar oil, and *malábathron* leaves were added, and the liquid was mixed with the powder prepared earlier[104]. Among the other prescriptions to prevent early baldness[105], Galen[106] advised to prepare a medicament using fenugreek, flaxseeds, ladanum, acacia resin, tejpat, gall, white parts of rose petals, Syrian sweet flag, aromatic βδέλλιον (*bdéllion*)[107] gum, burnt myrtle, bladderwrack

and iris. All the ingredients were to be ground and mixed[108]. He also listed the so-called λεπτυντικὰ τριχῶν (*leptyntiká trichón*) i.e. substances that made hair soft and delicate. For poor people they usually were powders made by grinding barley, broad bean, and vetch, for example, with whatever locally available perfume such as rose or iris. Wealthy people instead could afford *leptyntiká trichón* with spikenard, valerian spikenard[109] or *Valeriana tuberosa*[110]*, malábathron*, cardamom, myrrh, saffron, costus, or a balm called ἡδύχρουν (*hedýchroun*)[111]. Galen also mentioned that Criton wrote much about those substances[112], and he quoted two specific formulations as well[113]. It is worth noting here that these very cosmetics were still mentioned by Aetius[114] in the 6th c. AD.

Thanks to its aroma, *malábathron* was used against unpleasant smell in the mouth. Dioscorides already advised his readers to put tejpat leaves under the tongue in order to freshen their breath[115]. The scent of *malábathron* was also used in tooth pastes. The recipe for such a compound identified as σμῆγμα (*smégma*) appears in Galen[116]. Later on, Paul of Aegina listed a whole set of oral hygiene powders called ὀδοντοσμήγματα (*odontosmégmata*) that were perfumed, among others, with tejpat leaves[117].

Malábathron was also administered to treat cough together with saffron, balm of Mecca, spikenard, dried rose petals, and many other plants according to a formula that Galen learnt from Apollonius[118]. The same can be found in the 4th c. in Oribasius[119].

Malábathron was much used to cure infections of the urinary tract, including other, related problems such as internal edemas or jaundice[120]. Dioscorides recommended it in particular in what he referred to as δψσυρια (*dysuria)* and λιτηιασισ (*lithiasis)*. It is not surprise that *malábathron* was among the ingredients of Dioscorides' recipe for a wine curing dysuria[121]. The medicament prepared by Polyarchus mentioned by Galen eased similar ailment, being efficacious to treat not only bladder problems, but also pneumonia, pleurisy, stomach

and spleen aches, edemas, womb disorders, and even hard tissue pathological formations resulting from κατὰ συμπάθειαν (*katá sympátheian*) body reactions[122], as well as digestive disorders, acidification, and vomiting of bile[123]. The formula contained expensive substances[124]. It is worth adding that Oribasius transmitted a version of a prescription for the medicine called *polyárcheion*[125], the ingredients of which also included *foliátion* (φολιάτον) and *malábathron* leaves. He wrote that the medicine was given to people suffering from edemas, spleen problems, gastritis, enteritis, liver disorders, and dysentery[126], all this suggesting that urinary tract disorders were not *expressis verbis* included among the therapeutic applications of *malábathron*. However, he probably was aware of Dioscorides' and Galen's theories, as the aromatic leaves of tejpat were listed among the ingredients of a κονδῖτον νεφριτικόν (*kondíton nefritikón*) wine.

Malábathron in cuisine

In ancient and Byzantine cuisine *malábathron* leaves were a desirable but not essential ingredient. They were not the core element of ancient and Byzantine diet. Medical sources clearly indicate that physicians never classified them as a food *sensu stricto* and as a substance with a significant nutritional value. Moreover, though characterised by an exceptional aroma, tejpat leaves did not have a distinctively wide spectrum of properties or a particularly strong effect in any of the therapeutic actions they were credited with. This fact distinguished them from other aromatic spices, particularly pepper, the δυνάμεις (*dynámeis*) of which were far more significant[127]. Thus, the most attractive characteristics of *malábathron* were its scent and flavour, justifying its use in *haute cuisine*. In any case many cheaper aromatic substances were available so that tejpat leaves could have been replaced with equally attractive but less costly substitutes.

Information on *malábathron* in cuisine is scarce in medical sources. It is mostly limited to the recipes for medicinal wines. For example,

Dioscorides referred to a kind of wine made of Syrian and Celtic nard and tejpat, which was administered to people suffering from kidney disorders, jaundice, liver conditions, having problems with urinating (dysuria), pale skin, and stomach disorders[128]. Similarly, in the medicinal wine catalogue in Oribasius' *Collectiones medicae,* we find a recipe for wine called *apsinthάton*, which included costus, *malábathron*, Nepal cardamom, cinnamon cassia, honey, and wormwood stipped in wine for a while[129]. In another of Oribasius' works, namely *Eclogae medicamentorum*, there is a recipe for *kondíton nefritikón* wine. It helped with chronic kidney and bladder pain, dysuria, ischuria, stranguria, and excessive cooling of these organs. It also contributed to the dissolution and excretion of renal stones[130]. Last but not least, Paul of Aegina provided a recipe for a wine used to treat internal edemas[131], which contained the leaves and *malabáthrou sfairía* (μαλαβάθρου σφαιρία)[132]. Among the other ways of using *malábathron* in the culinary art, we should mention a recipe for a certain mixture that Oribasius preserved in his *Eclogae medicamentorum*. It was a sort of digestive that could very well have been used as an addition (for example as a dressing) to other dishes. It was a bitter blend called πικρά (*pikrá*)[133], made of aloe, *malábathron*, costus, *kassía*, cardamom, iris, skin of fennel root, mastic, Celtic nard, ginger, vinegar, and honey[134]. The recipe for a sauce used with hare meat appears in Anthimus' *De observatione ciborum*[135]. It is included in the recipe for a sweet sauce suitable for that kind of venison, which was made of pepper, cloves, ginger, costus, nard and leaves of tejpat[136]. Anthimus' work was dedicated to Theuderic, the king of Franks. Because of this dedication, we may assume that the recipe was intended for the wealthy Frankish elite.
In *De re coquinaria* tejpat appears mainly as an ingredient of sauces (*iura*), in which some other spice gives the dominant aroma. Three of those sauces are the so-called *cuminata*[137] (with the prevailing role of cumin), chiefly served with crustaceans. The fourth (*laseratum*[138]) is based on the flavour of asafoetida. Interestingly, in the latter recipe

malábathron appears in a curious configuration, in a triad also comprising spikenard and costus. These two spices frequently accompany *malábathron* in medical sources, and Paul of Aegina considered them as substitutes for *malábathron*[139].

There are no reasons to assume that *De re coquinaria* recipes for the beverages like *apsinthium Romanum* and *conditum paradoxum* could include other leaves than those of tejpat. Such formulae were based on Greek sources[140], in which tejpat leaves were employed. If so, we can also conclude that the presence of both terms, i.e. *folium* and *malabathrum*, in book I and IX is probably a mistake of the scribe, who should have written *folium malabathri* instead.

Conclusions

Malábathron is an excellent example of the process of globalisation of the ancient and early medieval trade. Although there are no arguments supporting the thesis about its mass import to the Mediterranean, tejpat was noticeably present in medicine and cuisine over the centuries covered in this study.

We cannot establish the exact moment when the aromatic leaves started to be transported to the thriving Mediterranean centres of ancient Greece and Rome, but we can definitely state that the interest in this imported product sharply increased around the end of the 1st c. BC[141], possibly thanks to the Roman conquest of the Near East and annexation of Egypt.

Tejpat leaves were clearly and *expressis verbis* described in medical sources. Although knowledge of their dietetic and therapeutic applications do not appear in extant writings before the second half of the 1st c. AD with Dioscorides' *De materia medica*, there is little doubt that it was anterior. Significantly, such knowledge was maintained at least up to the 7th c. AD.

Malábathron never became a common medicine or culinary ingredient. Because it was imported from distant lands (from China, through India

to Syria and Egypt, and then to the northern coasts of the Mediterranean Sea), it was very expensive, being consumed by a limited group. As medical sources indicated, it was used as an ingredient of medicaments prepared exclusively for wealthy people. Anthimus' recipe hints at a similar role in cuisine in the West until the 6th c. AD at least.

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hrsg. Leven K-H München: C H Beck; 2005. cols. 227-229; Scarborough J, Dioskouridēs of Anazarbos. In: Keyser PT, Irby-Massie GL, see note 2, pp. 271-273. Though Euporista vel de simplicibus medicinis is today considered to be a work by a different author, it is unquestionable beyond doubt that he must have known the writings of the doctor of Anazarbus very well and that is why his work is a reflection of the doctrine valid in Dioscorides' period. On Euporista vel de simplicibus medicinis see Wellmann M, Die Schrift des Dioskurides Περὶ ἁπλῶν φαρμάκων. Ein Beitrag zur Geschichte der Medizin. Berlin: Weidmann; 1914. passim; Riddle J M, see note 3, pp. XXVI–XXVII.

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10. For De re coquinaria and its authorship, see Laurioux B, Cuisiner à l'antique: Apicius au Moyen Âge. Médiévales 1994;26:17-38; Edwards J, Philology and cuisine in De re coquinaria. The American Journal of Philology 2001;122(2):255-263; Grainger S, The myth of Apicius. Gastronomica 2007;7(2):71-77.
11. See Casson L, General commentary. In: Casson L, The Periplus Maris Erythraei: text with introduction, translation, and commentary, intr., transl., comm. Princeton: Princeton University Press; 1989. p. 241; Dalby A, Dangerous tastes. The story of spices. London: The British Museum Press; 2002. pp. 41-42; Idem, Food in the ancient world from a to z. London-New York: Routledge; 2003. pp. 206; Keyser PT, Irby-Massie GL Glossary. In: Keyser PT, Irby-Massie GL, see note 2. p. 924; Kokoszko M, Rzeźnicka Z, Malábathron (μαλάβαθρον). Kilka uwag o roli Cinnamomum tamala w kuchni i medycynie antyku i Bizancjum w okresie pomiędzy I a VII wiekiem. Przegląd Nauk Historycznych 2016;15(1):16.
12. Laufer B, Malabathron. Journal Asiatique 1918;12:5-49.
13. See Casson L, see note 11. p. 241; Dalby A, Dangerous tastes..., see note 11. p. 42; Idem, Food…, see note 11. p. 206.
14. See the discussion underneath.
15. A Greek pharmacist active at the turn of the 1st c. BC and the 1st c. AD, see Keyser PT Poluarkhos. In: Keyser PT, Irby-Massie GL, see note 2, p. 680.

16. Galeni de compositione medicamentorum secundum locos libri X, 185, 8 – 186, 8, vol. XIII (malábathron – 185, 16, vol. XIII). In: Claudii Galeni opera omnia, ed. Kühn C G, vols. XII-XIII. Lipsiae: C Cnobloch; 1826-1827 (hereinafter: Galen, De compositione medicamentorum secundum locos).
17. Oribasii collectionum medicarum eclogae medicamentorum, 51, 8, 1–9, 1 (fýllon – 51, 8, 4). In: Oribasii collectionum medicarum reliquiae, vol. IV, libros XLIX-L, libros incertos, eclogace medicamentorum, indicem continens, ed. Reader I Lipsiae-Berolini, Teubner; 1933 (hereinafter: Oribasius, Eclogae medicamentorum).
18. Aetii Amideni libri medicinales I-VIII, I, 133,1–7 (malábathron – I, 133,2), ed. Olivieri A Lipsiae-Berolini, Teubner; 1935-1950 (hereinafter: Aetius of Amida, Iatricorum libri).
19. On the term, also see the part of the present study discussing users of tejpat.
20. This form is present in De re coquinaria and Digesta Iustiniani. See Apicius. A critical edition with an introduction and an English translation of the Latin recipe text Apicius, I, 29; I, 30; IX, 1, 3; IX, 7, eds., transl. Grocock Ch, Grainger S, Blackawton, Totnes, Devon: Prospect Books; 2006 (hereinafter: Apicius, De re coquinaria); The digest of Justinian. Latin text, XXXIX, 4, 16, 7, 3, eds. Mommsen T, Krüger P, transl. Watson A, vols. I-IV. Philadelphia: University of Pennsylvania; 1895.
21. This form is present for instance in Historia naturalis by Pliny the Elder, as well as De medicina by Celsus and Odes by Horace. See: Pliny, Natural history with an English translation in ten volumes, XII, 58, 129; XIII, 2, 14; XIII, 2, 18; XIV, 19, 108, transl. Rackham H, vol. IV. London-Cambridge, W. Heinemann-Mass. Harvard University Press; 1960 (hereinafter: Pliny, Historia naturalis); Celsus, De medicina with an English translation in three volumes, V, 23, 1B, 1; V, 23, 3B, transl. Spencer WG, vol. II. London-Cambridge: Mass., W. Heinemann-Harvard University Press; 1961 (hereinafter: Celsus, De medicina); Horace, Odes, II, 7, 8. In: Horace, Odes and epodes, ed., transl. Rudd N Cambridge Mass.-London: Harvard University Press; 2004. (hereinafter: Horace, Carmina). For *malobathrum* see: André J, Lexique des termes de botanique en Latin. Paris: Libraire C Klincksieck; 1956. p. 140; Idem, Les noms de plantes dans la Rome antique. Paris: Société d'Édition Les Belles Lettres; 1985. p. 105.
22. Dalby A, Food..., see note 11, p. 206.
23. Apicius, De re coquinaria, I, 1; I, 3; I, 27; I, 29, 1; I, 34; VI, 5, 4; VII, 6, 8; VIII, 2, 6; IX, 1, 3; IX, 7; IX, 8, 2; IX, 8, 3.
24. Apicius, De re coquinaria, I, 29, 1; I, 30, 2; IX, 1, 3; IX, 7.

25. See Grocock CH, Grainger S, A glossary to Apicius. In: Apicius, De re coquinaria, see note 20. pp. 346-347, 350.
26. Oribasius, Eclogae medicamentorum, 62, 8, 1–9, 1 (leaf [= *malábathron*] – 62, 8, 6). The identification is additionally justified by the fact that the term "leaf" appears in tandem with the name of yet another imported and costly spice, namely spikenard. On the scale of its utilization in medicine the part of the present study was devoted to users of tejpat.
27. Apicius, De re coquinaria, I, 1.
28. See the fragment of Historia naturalis quoted earlier.
29. Apicius, De re coquinaria, I, 3.
30. Oribasii collectionum medicarum reliquiae, V, 33, 13, 1–5 (leaf = *malábathron*] – V, 33, 13, 2), ed. Reader I, vols. I-IV. Lipsiae-Berolini: Teubner; 1928-1933 (hereinafter: Oribasius, Collectiones medicae). In the formula "leaf" appears along with three other expensive spices, namely costus, Nepal cardamom, and cinnamon cassia, which seems to suggest that all of them belonged to the same group.
31. Aetius of Amida, Iatricorum libri, III, 71, 1–4 (leaf = *malábathron* – III, 71, 1); III, 72, 1–3 (leaf = *malábathron* – III, 72, 2). This prescription also includes ingredients which belonged to the category of imported and expensive spices.
32. This doctrine was valid as of the times of Hippocrates, and was later adopted by Galen. See Kokoszko M, Jagusiak K, Rzeźnicka Z, Dietetyka i sztuka kulinarna antyku i wczesnego Bizancjum (II-VII w.), vol. I, Zboża i produkty zbożowe w źródłach medycznych antyku i wczesnego Bizancjum. Łódź: Wydawnictwo Uniwersytetu Łódzkiego; 2014. pp. 5-26, particularly pp. 6-10; Idem, Cereals of antiquity and early Byzantine times. Wheat and barley in medical sources (second to seventh centuries AD), transl. Wodarczyk K, Zakrzewski M, Zytka M Łódź: Wydawnictwo Uniwersytetu Łódzkiego; 2014. pp. 7-28, particularly pp. 8-12.
33. Cinnamomum zeylanicum Blume.
34. Cinnamomum Cassia (Nees) Nees and Eberm. ex Blume or Cinnamomum Loureiroi Nees.
35. Dalby A, Dangerous tastes..., see note 11. p. 36.
36. Cassía was mentioned by Sappho in one of her poems (Fragmenta, 44, 30. In: Poetarum Lesbiotum fragmenta, eds. Lobel E, Page DL Oxford: Clarendon Press; 1955). Given the time of her life, one can conclude that the presence of the plant in the Mediterranean preceded the second part of the 7th c. BC. Some plant remains corroborating the fact that plants of the Cinnamomum genus

were known in the Aegean in the 7th c. BC were also excavated on the premises of the Heraion at Samos (see Kuèan D, Zur Ernährung und dem Gebrauch von Pflanzen im Heraion von Samos im 7. Jahrhundert v. Chr. Jahrbuch des Deutschen Archäologischen Instituts 1995;110:1-64). Some researchers even claim that cinnamon was present in the ancient Nile Valley (Schoff WH, Cinnamon, cassia and Somaliland. Journal of the American Oriental Society 1920;40:263; Gilboa A, Namdar D, On the beginnings of South Asian spice trade with the Mediterranean region: a review. Radiocarbon 2015;57:273-274), and used by the Phoenicians in perfume production (see Namdar D, Gilboa A, Neumann R, Finkelstein I, Weiner S, Cinnamaldehyde in Early Iron Age Phoenician flasks raises the possibility of Levantine trade with South East Asia. Mediterranean Archaeology and Archaeometry 2013;12(3):1-19). What is more, Cinnamomum genus plant products were also mentioned in the Old Testament (Ezekiel, 22, 18, 3; 22, 20, 2; 27, 12, 3. In: Rahlfs A, Septuaginta, vol. II. Stuttgart: Württembergishe Bibelanstalt; 1935; Psalm, 44, 9, 1. It is interesting that the Hebrew term for cassia (namely qiddah, in its Greek transliteration) is present in De materia medica by Dioscurides who wrote that cassia's alternative name was kittó (κιττώ), see Pedanii Dioscuridis Anazarbei de materia medica libri V, I, 13, 2, 3, ed. Wellmann M, vols. I-III, Berolini: Weidmann; 1906-1914 (hereinafter: Dioscorides, De materia medica). The above-presented opinion has been, however, refuted recently by Stephen G, Haw Cinnamon, cassia and ancient trade. Journal of Ancient History and Archaeology 2017;4(1):5-18) who claims that the cinnamon and cassia of the ancient Mediterranean up to the 1st c. BC were products obtained from plants native of Northeast Africa, most probably from Cassia abbreviata. Oliv.

37. Phylotimos (around 4th/3rd c. BC) was a student of Praxagoras. See Diller H, Phylotimos. In: Mittelhaus K, RE, Bd. XX, 1. Stuttgart: J B Metzler; 1941. cols. 1030-1032; Manetti D, Phulotimos. In: Keyser PT, Irby-Massie GL, see note 2. p. 664.
38. See the discussion on the meaning of the term folium in De re coquinaria. The probability that Phylotimos knew *malábathron* is decreased by the fact that his contemporary Theophrastus (around 4th/3rd c. BC) did not mention tejpat. For the latter one see Wöhrle G, Theophrast v. Eresos. In: Leven K-H, see note 3, cols. 853-855; Millet P, Theophrastus and his world. Cambridge: Cambridge University Press; 2007. passim. Lack of *malábathron* in Corpus Hippocraticum (despite the fact that the authors mentioned similar products, such as cinnamon and kassía) is an argument against this thesis. For the formulations for medicaments contained in this collection, see Totelin

LMV, Hippocratic recipes. Oral and written transmission of pharmacological knowledge in fifth- and fourth-century Greece. Leiden-Boston: Brill; 2009. passim, particularly pp. 190-192.

39. Horace, Carmina, II, 7, 8; Martial, Epigrams with an English translation in two volumes, XIV, 146, transl. Ker WCA, vol. II. London-New York: W. Heinemann-G.P. Putnam's Sons; 1920 (hereinafter: Martial, Epigrammata).
40. Martial, Epigrammata, XI, 18.
41. Ovid, Tristia, III, 3, 69. In: Ovid with an English translation. Tristia. Ex Ponto, transl. Wheeler A L Cambridge, Mass.-London: Harvard University Press-W Heinemann; 1939.
42. See the work of Pliny.
43. *Nardostachys jatamansi* (D. Don) DC.
44. Known in the Mediterranean world in the 4th c. AD, and maybe even earlier. See Dalby A, Dalby A, Dangerous tastes..., see note 11, p. 87. It was described by Theophrastus, see Theophrastus, Enquiry into plants, IX, 7, 2, 18; IX, 7, 3, 2. In: Theophrastus, Enquiry into plants and minor works on odours and weather signs in two volumes, transl. Hort A, vol. II. London-Cambridge: Mass., Harvard University Press; 1961.
45. Dioscorides, De materia medica, I, 12, 1, 1 – 2, 11 (origin, cultivation, appearance of the plant – I, 12, 1, 1–9). Stephen G, Haw, however, identifies the plant as *Pistia stratiotes* L., see Haw SG, see note 36. p. 12.
46. From 1 to 400 denarii per pound of the finished product (depending on the quality).
47. It was a place from where the highest quality material was imported. A pound of dried leaves costed 60 denarii.
48. Pliny, Historia naturalis, XII, 59, 129. It must have been taken from Περὶ ὕλης by Sextius Niger.
49. A Byzantine historian active in the 7th c. AD, see Irby-Massie GL, Theophulaktos Simokattēs. In: Keyser PT, Irby-Massie GL, see note 2, pp. 801-802; Kotłowska A, Różycki Ł, The role and place of speeches in the work of Theophylact Simocatta. Vox Patrum 2016;36(66):353-382.
50. For the term *karykeía* see Kokoszko M, Some technical terms from Greek cuisine in classical and Byzantine literature. Eos 2008;95:269-283.
51. De Boor C (ed.), Theophylacti Simocattae historiae, VII, 13, 5, 3 – 6, 5. Leipzig: Teubner; 1887. See Dalby A, Flavours of Byzantium. Blackawton, Totnes, Devon: Prospect Books; 2003. p. 43; Idem, Tastes of Byzantium. The cuisine of a legendary empire. London-New York: I B Tauris; 2010. p. 43.

52. A Roman poet active in the 1st c. BC, see Nisbet RGM, Horace: life and chronology. In: Harrison SJ, The Cambridge companion to Horace. Cambridge: Cambridge University Press; 2007. pp. 7-21.
53. Horace, Carmina, II, 7, 8.
54. Even in the first half of the 7th c. AD Paul of Aegina described *malabáthrou sphairía* (μαλαβάθρου σφαιρία) as an ingredient of a therapeutic wine, see Paulus Aegineta, III, 48, 3, 25–26, ed. Heiberg I L, vols. I-II. Lipsiae-Berolini: Teubner; 1921-1924 (hereinafter: Paul of Aegina, Epitome).
55. Casson L (ed.), The Periplus Maris Erythraei: text with introduction, translation, and commentary, 65. Princeton: Princeton University Press; 1989. See Dalby A, Empire of pleasures: luxury and indulgence in the Roman Empire. London: Routledge; 2000. pp. 198-199; Idem, Dangerous tastes..., see note 11. pp. 41-42; Idem, Food..., see note 11, p. 206.
56. He thought that all changes can be treated with one medicament. This, according to Galen, was one of the signs of his lack of professionalism as far as medicine is concerned, see Galeni de compositione medicamentorum per genera libri VII, 636, 11 – 14, In: Claudii Galeni opera omnia. Kühn CG (ed.), vol. XIII. Lipsiae: C Cnobloch; 1827 (hereinafter: Galen, De compositione medicamentorum per genera).
57. Galen, De compositione medicamentorum per genera, 637, 18 – 638, 1, vol. XIII.
58. Origanum dictamnus L.
59. Galen claimed that the medicament was tested for its effectiveness, see Galen, De compositione medicamentorum per genera, 639, 6–7, vol. XIII. The aforementioned recipe, see Galen, De compositione medicamentorum per genera, 638, 7 – 639, 6, vol. XIII.
60. The second recipe, see Galen, De compositione medicamentorum per genera, 639, 7–10, vol. XIII. The Cyrenian juice is sílfion (σίλφιον). This fragment proves that this substance was imported from Cyrenaica even in the second half of the 2nd c. AD. Galen, as an excellent practitioner and expert in materia medica, surely did not mistake sílfion for asafoetida. He must have been familiar with the product from his personal experience and he did not make use of the testimony of the earlier authority either (which, on the other hand, was regularly done by Oribasius and later authors, see Roques D, Médecine et botanique: le silphium dans l'oeuvre d'Oribase, Revue des Études Grecques 1993;106:380-399). This argument was skipped in the study by Suzanne Amigues (Le silphium. État de la question. Journal des Savants 2004;2:191-226). As far as sílfion is concerned, see Andrews AC, The silphium of the

ancients. A lesson in crop control. Isis 1941;33(2):232-236; Dalby A, Silphium and asafoetida: evidence from Greek and Roman writers. In: Walker H, Spicing up the palate: proceedings of the Oxford Symposium on Food and Cookery. Oxford: 1992. Totnes, Blackawton, Devon: Prospect Books; 1993. pp. 67-72; IDEM, Dangerous tastes..., see note 11. pp. 17-19.

61. Third recipe, see Galen, De compositione medicamentorum per genera, 639, 10–11, vol. XIII.
62. Fourth recipe, see Galen, De compositione medicamentorum per genera, 639, 11–12, vol. XIII.
63. This means spikenard.
64. It was a sort of *malabáthron* essential oil, probably analogous to the one made according to the recipe mentioned by Oribasius, see Oribasius, Eclogae medicamentorum, 73, 31, 1–6. Also see Aetius of Amida, Iatricorum libri, I, 133,1–7. See also the discussion about the meaning of the term folium in De re coq\uinaria. Pliny, however, identifies it as spikenard oil, see Pliny, Historia naturalis, XIII, 2, 15.
65. The last prescription, see Galen, De compositione medicamentorum per genera, 639, 12 – 640, 12, vol. XIII.
66. In the title of the chapter the medicaments mentioned by Galen are called *polyteleís skeuasíai* (πολυτελεῖς σκευασίαι). In this way Galen implied a socially limited use of the listed therein sophisticated medicines based on imported ingredients, see Galen, De compositione medicamentorum per genera, 635, 18 – 636, 1, vol. XIII. On the other hand, he devotes an equally lengthy chapter to medicaments suitable for poorer people, see Galen, De compositione medicamentorum per genera, 640, 13 – 651, 5, vol. XIII.
67. Including slaves (similar to the young man being one of the protagonists of the story).
68. Galen, De compositione medicamentorum per genera, 635, 16 – 640, 12, vol. XIII.
69. Galen, De compositione medicamentorum per genera, 637, 14–17, vol. XIII.
70. Dioscorides, De materia medica, I, 12, 1, 1 – 2, 11 (origin, cultivation, appearance – I, 12, 1, 1 – 2, 2; dietetic description – I, 12, 2, 2–5; pharmacological description and general applications – I, 12, 2, 6–11).
71. Galeni de simplicium medicamentorum temperamentis ac facultatibus libri XI, 66, 15–16, vol. XII. In: Claudii Galeni opera omnia, ed. Kühn CG, vols. XI-XII. Lipsiae: C Cnobloch; 1826-1827 (hereinafter: Galen, De simplicium medicamentorum temperamentis ac facultatibus). No wonder that both spikenard and *malábathron* are usually present in the prescriptions. Let us add

here that Paul of Aegina considered kassía and spikenard to be equivalents of *malábathron*, see Paul of Aegina, Epitome, VII, 25, 12, 1.

72. Galen, De simplicium medicamentorum temperamentis ac facultatibus, 84, 11 – 85, 3, vol. XII.
73. There were, however, certain inconsistencies about small details. There was no doubt that *malábathron* had warming properties, but they were described as either in the first (see Oribasius, Collectiones medicae, XIV, 15, 1, 1–5 [*malábathron* – XIV, 15, 1, 3]; Oribasii Synopsis ad Eustathium filium, II, 3, 1, 1–3 [*malábathron* – II, 3, 1, 2]. In: Oribasii synopsis ad Eustathium filium et libri ad Eunapium, ed. Raeder I. Lipsiae-Berolini: Teubner: 1926 [hereinafter: Oribasius, Synopsis ad Eustathium filium]; Oribasii libri ad Eunapium, II, 3, 1, –4 [*malábathron* – II, 3, 1, 5–6]. In: Oribasii synopsis ad Eustathium filium et libri ad Eunapium, ed. Raeder I Lipsiae-Berolini: Teubner; 1926 [hereinafter: Oribasius, Libri ad Eunapium]; Aetius of Amida, Iatricorum libri, II, 199,1–3 [malábathron – II, 199, 2]) or in the third degree (Aetius of Amida, Iatricorum libri, II, 201,1–10 [*malábathron* – II, 201, 7]). On the other hand, all physicians agreed as to the second degree of its drying properties, see Oribasius, Collectiones medicae, XIV, 26, 1, 1–16 (*malábathron* – XIV, 26, 1, 6); Oribasius, Libri ad Eunapium, II, 5, 1, 1 – 4, 6 (*malábathron* – II, 5, 2, 6); Aetius of Amida, Iatricorum libri, II, 211,1–7 (*malábathron* – II, 211, 7).
74. The main description of *malábathron* presented in Oribasius' Collectiones medicae is borrowed from Dioscorides' De materia medica (Oribasius, Collectiones medicae, XI, μ, 2, 1–7). See Oribasius, Synopsis ad Eustathium filum, II, 56, 35, 1 – 36, 1 (*malábathron* – II, 56, 35, 1–2). Oribasius also mentions Galen's remark from De simplicium medicamentorum temperamentis ac faultatibus about the similarities regarding the effects of *malábathron* and spikenard, see Oribasius, Collectiones medicae, XV, 1:12, 2, 1–2.
75. Aetius of Amida, Iatricorum libri, I, 266, 1; II, 196, 64–68.
76. Paul of Aegina, Epitome, VII, 3, 12, 6.
77. A wider range of cures, see Kokoszko M, Rzeźnicka Z, see note 11. pp.15-29.
78. Dioscuridis περὶ ἁπλῶν φαρμάκων, I, 11, 1, 19 (*malábathron* – I, 11, 1, 6). In: Pedanii Dioscuridis Anazarbei de materia medica libri quinque, ed. Wellmann M, vol. III. Berolini: Weidmann; 1914 (hereinafter: Euporista vel de simplicibus medicinis).
79. Oribasius, Eclogae medicamentorum, 81, 1, 3–5. Substances of that kind are also known from the encyclopaedia penned by Celsus, who quotes a recipe containing many ingredients (such as opium, iris, kassía, tejpat, black

cardamom, Syrian and Gallic nard, castoreum, galbanum etc.), see Celsus, De medicina, V, 23, 3B.

80. Oribasius, Eclogae medicamentorum, 81, 13, 1–6 (*malábathron* – 81, 13, 3).
81. That is why tejpat is mentioned several times in the fragment of the work devoted to recipes of that type provided by Asclepiades (2nd/1st c. BC), see Galen, De compositione medicamentorum per genera, 1009, 14 – 10033, 11, vol. XIII. Such medicines reduced complaints regarding the pain arising from fatigue and body strain. For Asclepiades, see Wellmann M, Asklepiades (43). In: Wissowa G, RE, Bd. II. Stuttgart: J B Metzler; 1896. cols. 1633-1634; Ihm S, Asklepiades v. Bithynien. In: Leven K-H, see note 3. cols. 107-108.
82. See fragments of Oribasius' works quoted below.
83. A Greek physician active in the 1st c. AD, see Wellmann M, Andromachos (18). In: Wissowa G, Re, Bd. I. Stuttgart: J B Metzler; 1894. col. 2154; Touwaide A, Andromakhos of Crete (Younger). In: Keyser PT, Irby-Massie GL, see note 2. pp. 79-80.
84. Made of the juice of *Dorema ammoniacum* D. See Spencer WG, List of medicamenta. In: Celsus, De medicina, see note 21, pp. XIX-XX; Amigues S, see note 60. pp. 208-209.
85. *Euphorbia resinifera* L.
86. Probably a kind of ointment obtained from tejpat. An analogously expensive product is *krokómagma* (κροκόμαγμα), for example see Dioscorides, De materia medica, I, 27, 1, 1–6; Oribasius, Collectiones medicae, XI, κ, 40, 1–6. For definition see Spencer WG, see note 84. pp. XXVIII-XXIX.
87. Galen, De compositione medicamentorum per genera, 1039, 5–9, vol. XIII (ointment made of *malábathron* - 1039, 7, vol. XII; *malábathron* - 1039, 8, vol. XIII).
88. The author mentioned treatment of inflammations described as flegmonaí (φλεγμοναί), see Dioscorides, De materia medica, I, 12, 2, 8–9.
89. Euporista vel de simplicibus medicinis, I, 31, 1, 1–4 (*malábathron* – I, 31, 1, 2).
90. Galen, De compositione medicamentorum secundum locos, 730, 1, vol. XII.
91. Light and spongy stone similar to pumice. Used in medicine and in the dyeing industry.
92. Galen, De compositione medicamentorum secundum locos, 727, 5 – 730, 4, vol. XII (*malábathron* – 728, 16, vol. XII).
93. Galen, De compositione medicamentorum secundum locos, 723, 6 – 724, 6, vol. XII (*malábathron* – 723, 16, vol. XII).
94. Aetius of Amida indicated Galen as his source of knowledge.

95. Aetius of Amida, Iatricorum libri, VII, 40, 1–37 (the fragment concerning *psoródes diáthesis* [ψωρώδης διάθεσις] – VII, 40, 32–35; *malábathron* – VII, 40, 33).
96. Zinc oxide usually imported from Cyprus. Spencer W G, see note 84, p. XXIII.
97. *Acacia arabica*/*Vachellia nilotica* (L.) Hurter and Mabb. See Spencer W G, see note 84. pp. XV-XVI.
98. *Rhamnus petiolaris Boiss*.
99. Spencer W G, see note 84, p. XXIII.
100. Galen, De compositione medicamentorum secundum locos, 756, 5 – 758, 2, vol. XII (recipe – 756, 5–14, vol. XII; *malábathron* – 756, 9, vol. XII).
101. Paul Of Aegina, Epitome, VII, 16, 48, 1–5 (*malábathron* – VII, 16, 48, 3).
102. A Greek physician active at the turn of the 1st and the 2nd c. AD, see Ihm S, Soran. In: Leven K-H, see note 3. cols. 822-823; Scarborough J, Sōranos of Ephesos. In: Keyser PT, Irby-Massie GL, see note 2. pp. 749-751.
103. *Dryopteris filix-mas* (L) Schott.
104. Galen, De compositione medicamentorum secundum locos, 414, 17 – 421, 2, vol. XII (the treatment quoted – 420, 2 – 421, 2, vol. XII; *malábathron* – 420, 12–13, vol. XII).
105. Galen, De compositione medicamentorum secundum locos, 421, 3 – 426, 8, vol. XII.
106. Also referring to the theories by Soranus.
107. Obtained from *Balsamodendrum africanum* Arn. or *Balsamodendrum Mukul* Hook. ex Stocks/*Commiphora africana* (A Rich) Engl. (syn. *Heudelotia Africana* A Rich). See Dalby A, Dangerous tastes..., see note 11. pp. 109-110.
108. Galen, De compositione medicamentorum secundum locos, 421, 15 – 422, 15, vol. XII.
109. *Valeriana celtica L.*
110. *Valeriana tuberosa L.*
111. An essential oil produced on the island of Kos, see Dioscorides, De materia medica, I, 58, 3, 10–12. The physician wrote that the medicine had similar properties to the one prepared with an addition of marjoram, but was distinguished by stronger and more pleasant aroma. For marjoram, see Andrews AC, Marjoram as a spice in the classical era. Classical Philology 1961;56(2):73-82, particularly pp. 77-78.
112. A Greek physician interested also in cosmetology, active at the turn of the 1st and the 2nd c. AD, see Scarborough J, Criton, physician to Traian: historian and pharmacist. In: Eadie JW, Ober J, The craft of the ancient historian:

essays in honor of Chester G. Starr. Lanham, MD-London-New York: University Press of America; 1985. pp. 387-405; Scarborough J, Touwaide A, Kritōn of Hērakleia Salbakē, T Statilius. In: Keyser PT, Irby-Massie GL, see note 2. pp. 494-495.

113. Galen, De compositione medicamentorum secundum locos, 456, 7 – 459, 5, vol. XII (*malábathron* – 458, 5, vol. XII; recipes – 458, 9 – 459, 5, vol. XII).
114. Aetius of Amida, Iatricorum libri, VI, 65,1–21 (*malábathron* – VI, 65, 18).
115. Euporista vel de simplicibus medicinis, I, 80, 1, 1–4 (*malábathron* – I, 80, 1, 3–4).
116. Galen, De compositione medicamentorum secundum locos, 880, 11–16, vol. XII (*malábathron* – 880, 15, vol. XII).
117. Paul of Aegina, Epitome, III, 26, 7, 1–7 (*malábathron* – III, 26, 7, 7).
118. Galen, De compositione medicamentorum secundum locos, 70, 3–10, vol. XIII (*malábathron* – 70, 3, vol. XIII). Apollonius of Alexandria, a Greek physician active at the turn of the 1st c. BC and the 1st c. AD, see Leven K-H, Apollonios Mys. In: Leven K-H, see note 3, col. 69; Irby-Massie GL, Apollōnios of Alexandria, "Mus". In: Keyser PT, Irby-Massie GL, see note 2, pp. 111-112.
119. Oribasius, Eclogae medicamentorum, 28, 5, 1–4 (*malábathron* – 28, 5, 1).
120. Euporista vel de simplicibus medicinis, II, 119, 1, 1 – 5, 10 (*malábathron* – II, 119, 5, 1).
121. Dioscorides, De materia medica, V, 57, 1, 1–6 (recipe 1 – V, 57, 1, 1–3; effect – V, 57, 1, 4–5). See dissertation on the issue of use of *malábathron* in cuisine.
122. Galen, De compositione medicamentorum secundum locos, 184, 16 – 185, 7, vol. XIII.
123. Galen, De compositione medicamentorum secundum locos, 185, 8–12, vol. XIII.
124. Galen, De compositione medicamentorum secundum locos, 185, 8 – 186, 8, vol. XIII (*malábathron* – 185, 16, vol. XIII).
125. A variant of the recipe was mentioned by Galen.
126. Oribasius, Eclogae medicamentorum, 51, 8, 1–9, 1 (*folíaton* – 51, 8, 3; *malábathron* – 51, 8, 4).
127. See the description of pepper in the work of Aetius of Amida, especially the assessment of the two main effects, which were also classified in the descriptions of *malábathron*, namely warming and drying properties, see Aetius of Amida, Iatricorum libri, I, 316, 1–5; warming and drying properties – I, 316, 1–5).
128. Dioscorides, De materia medica, V, 57, 1, 1–6 (recipe 1 – V, 57, 1, 1–3; effect – V, 57, 1, 4–5).

129. See the part of the present study devoted to Greek and Latin terminology used to denote tejpat.
130. See the part of the present study devoted to Greek and Latin terminology used to denote tejpat.
131. Paul of Aegina, Epitome, III, 48, 1, 1 – 5, 9.
132. Paul of Aegina, Epitome, III, 48, 3, 21–27 (*malábathron* – III, 48, 3, 25–26). See Paul of Aegina, Epitome, VII, 5, 11, 1–5.
133. The name probably referred to the bitterness of this addition. Analogous additions can also be found in De re coquinaria. For example, see Apicius, De re coquinaria, I, 32. The recipe was repeated in chapter three, see Apicius, De re coquinaria, III, 18, 2; See Kokoszko M, Rzeźnicka Z, Dietetyka w De re coquinaria. Przegląd Nauk Historycznych 2011;10(2):5-25; Kokoszko M, Rzeźnicka Z, Jagusiak K, Health and culinary art in antiquity and early Byzantium in the light of De re coquinaria. Studia Ceranea 2012;2:145-164.
134. Oribasius, Eclogae medicamentorum, 79, 15, 1 – 16, 1 (leaf [= *malábathron*] – 79, 15, 1).
135. Anthimus was a Byzantine physician active in the 6th c. AD, see Grant M, A note on Anthimus' "De obseruatione ciborum epistula". Hermes 1985;114(3):383-384; Scarborough J, Anthimus (of Constantinople?). In: Keyser PT, Irby-Massie GL, see note 2, pp. 91-92.
136. Anthimus, On the observance of foods. De observatione ciborum, 13, ed., transl. Grant M Totnes, Blackawton, Devon: Prospect Books; 2007.
137. Apicius, De re coquinaria, I, 29, 1; IX, 1, 3; IX, 7. For cumin, see Dalby A Dangerous tastes..., see note 11. pp. 127-128.
138. Apicius, De re coquinaria, I, 30, 2. For the role of asafoetida, see Dalby A Dangerous tastes..., see note 11. pp. 110-112; Idem, Food..., see note 11. p. 89.
139. Paul of Aegina, Epitome, VII, 25, 12, 1.
140. The date of their creation is difficult to be established, but in the 1st c. AD they were already circulating. The variants of these were written down by Dioscorides. At the beginning of the 32nd chapter of book V of Collectiones medicae, Oribasius indicates that the source used by him in order to create the medical wine catalogue was Phylotimus. It may be supposed that the latter one, at the turn of the 4th and 3rd centuries BC, gathered the recipes of our interest for the first time and included them in his works. It is obvious that Dioscorides, Oribasius, Aetius of Amida and Paul of Aegina referred to the models created earlier. The observations presented indicate that the recipes appeared before the collection entitled De re coquinaria was assembled.
141. The time of Horace.

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