

Articoli/Articles

PHARMACY RELATED PROFESSIONS IN BYZANCE

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SUMMARY

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*Pharmacy related professions are greatly flourishing in Byzance. Various oriental drugs alien to Mediterranean medical traditions are added to the Hellenistic and early Roman transnational legacy, while ameliorated and even novel laboratory techniques are applied in preparing sophisticated medicines; and numerous new therapeutic schemes are proposed. The vivacious commerce of raw materials is controlled by the influential and multi-faced guild of myrepsoi, importers and whole sellers of cautiously standardized drugs, as well as experienced laboratory technicians. At the same time great scale health institutions are offering internal pharmaceutical services, staff members responsible for remedy preparation being stated as pimentarioi. It may be assumed that they are recruited among the myrepsoi, since hospital service is guaranteeing a stable and prestigious career, whose benefits are indeed comparable to the large drug import activities undertaken by wealthy members of the guild.*

As a result of both the methodical study of lately introduced raw materials or recipes, and a thorough systematisation of past scientific knowledge, pharmacy related professions are greatly flourishing in Byzance. During long centuries various oriental drugs alien to Mediterranean medical traditions are added to the Hellenistic and early Roman transnational legacy, thus

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*i.a. Indian cannabis, causing a strange drunkenness ... therefore Arabs are chewing the leaves instead of wine; and net, a mixture of musk, sulphurous pitch and Indian eagle wood<sup>1</sup>;*

or turmeric and goat's rue<sup>2</sup>, proposed by Michael Psellus<sup>3</sup>. Qualities and exploitation of the materials introduced are best codified by Symeon Seth, the governor of Antioch and author of a celebrated encyclopaedic treatise:

*since many scholarly writers, not solely Greeks, but as well Persians and Arabs and Indians have recorded the qualities of edible drugs ... I thought that I should compile the most excellent of their proposals<sup>4</sup>.*

Ameliorated and even novel laboratory techniques are applied in preparing sophisticated medicines; distillation of organic materials, as proposed by Arab scientists, being the most significant development<sup>5</sup>. Already in the early 900's the chief court physician Theophanes Nonnos is utilizing in eye drops and uterus disinfectants rose distillate, a material to be included the emperor's camp pharmacy:

*eight silver cooling vessels bearing isolation coverings, for keeping sour grape wine and rose distillate and water; for rose distillate two large cooling vessels<sup>6</sup>.*

In this challenging framework numerous new therapeutic schemes are proposed. Distinguished physicians are including innovative recipe collections in their manuals, while eminent scholars and senior state officials are editing *materia medica* and diaetetics compilations. Thus Symeon Seth, the ecumenical patriarch saint Photius, the high-rank diplomat Michael Psellus:

*I have sent you a bitter remedy, new in conception and galenic form, and an aid for the stomach prepared with the same novel laboratory know-how, but of a more respectable age<sup>7</sup>;*

and: *capper is softening the throat, and the sweet species more, mixed with vinegar it is dissolving phlegm*<sup>8</sup>. Even the commentaries on Dioscurides are broadening the conventional wisdom. For instance, wild carrot (*Daucus gingidium L.*) for centuries considered as: *good for the digestive track and diuretic*<sup>9</sup>, is now acquiring further indications: *a decoction of it drunk with wine is useful for the bladder*<sup>10</sup>. At a more professional level, essential dispensaries are due to the collective labour of hospital workforce.

The vivacious commerce of raw materials is controlled by the influential and multifaced guild of *myrepsoi*, importers and whole sellers of cautiously standardized drugs, as well as experienced laboratory technicians. In the 10th century the *Eparch's Book* is strictly defining their trade privileges and duties<sup>11</sup>:

*the myrepsoi are not allowed to store any trivial goods ... but solely to trade pepper, bamboo canes, cinnamon, aloe, sulphurous pitch, musk, incense, myrrh, indigo, Indian lake, azurite, curcuma, and all further drugs necessary in preparing perfumes or in dyeing ... and they import the goods they are allowed to by way of Chaldea or Trapezunt or even from some other places*<sup>12</sup>.

Wealthy and specialized in an art close to science: *changing the fragrances' essence and preparing perfumes*<sup>13</sup>, Byzantine *myrepsoi* benefit from a rather elevated public status, and are hardly accused of supporting frivol tendencies: *sole the saint patriarch Luke discourages clericals from possessing myrepsos' laboratories*<sup>14</sup>. Occasionally, their name is mentioned connected to their discipline, thus *Ioannis* proposing a valerian preparation in the early years<sup>15</sup>, Stratonicos Kondos, established in the 12th century *at the Leomacellus market*<sup>16</sup>; and the greatest *materia medica* author of the late Middle Ages and the Renaissance, Nicolaos on Nicaea. Socially significant is, furthermore, their presence as respected witnesses in an important real estate transaction signed at 1320:

*in front and in presence of the most honorable noblemen ... the blissful messier Theodoros Chalazas the myrepsos, and the principal of the guild of myrepsoi messier Theodoros Vrachnos*<sup>17</sup>.

Even though their presence is occasionally ambivalently confronted: *the great heat ... in summertime others found it hard and difficult to stay there*<sup>18</sup>; but: *should you arrive at a myrepsos' laboratory and remain nearby, you shall even unwillingly be immersed in the beautiful aroma*<sup>19</sup>; the highly specialized laboratories are considered noteworthy properties, not straightforwardly donated: *I kept for myself part of a myrepsos' laboratory and a dwelling*<sup>20</sup>. In the early 12th century the lease is by three times higher than the one asked for a physician's quarters: *the myrepsos' laboratory, which is rented for fourteen hyperpyra and the lodgings used by Theodoros the physician for five hyperpyra*<sup>21</sup>.

Since times immemorial *myrepsoi* are preparing delicate fragrances, sophisticated cosmetics and precious incenses: *it proved useful as scent ingredient, and it is used by the myrepsoi*<sup>22</sup>; and: *myrepsoi used it in perfume preparations*<sup>23</sup>; further: *fragrances extracted of various materials are blended in the hands of myrepsoi to make one species*<sup>24</sup>; or: *best trained myrepsoi are cautiously assembling numerous scents, and are preparing a perfumed incense*<sup>25</sup>. At the same time the laboratories are cooking composite remedies. Galen himself is regarding *myrepsoi* as assistants to physicians: *the physician and his assistants resemble an architect and the masons ... these assistants are ... myrepsoi etc.*<sup>26</sup>; while in the 5th century the discipline is clearly defined as auxiliary: *the myrepsos' art is supplementary; it is preparing ointments and plasters, and is thus materializing the physician's wisdom*<sup>27</sup>. In a late commentary the identification is projected to aristophanic Athens, where *myrepsoi* appear as responsible for preparing and selling prescribed medicines:

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*it is evident that myrepsoi were preparing the medicines used by physicians for treatment; and they sell them to physicians*<sup>28</sup>.

In this broad framework the term *myrepsos* is occasionally connected to *pharmakon*<sup>29,30</sup>. Although both responsible for preparing medicines: *they were assistants, as pharmakon merchants are to physicians*<sup>31</sup>; and: *as if they had abandoned the best physician to be cured by a pharmakon merchant*<sup>32</sup>, or: *like a pharmakon merchant preparing ... eye drops*<sup>33</sup>, the disciplines are however discernable: *they shall be sent at the myrepsos' or at the pharmakon merchant's*<sup>34</sup>. As members of a respectable guild combining commercial and manufacturing activities, *myrepsoi* enjoy an indisputable social status. Should they at times overestimate their erudition: *they call themselves medical doctors*<sup>35</sup>, they are nevertheless on no account connected to gloomy activities like poison dispensation: *pharmakon merchants are using drugs to kill*<sup>36</sup>, nor are they documented as mere reptile keepers: *pharmakon merchants, that means snake keepers*<sup>37</sup>. While indispensable in health care: *a physician with botanic knowledge*<sup>38</sup>, Byzantine *rhizotomoi* or *botanists*<sup>39</sup> are mere plant specialists: *rhizotomos' art, botanic expertise*<sup>40</sup>. The term is in fact no more implying any laboratory activity, as it did at Galen's times: *those preparing remedies, named rhizotomoi and botanists*<sup>41</sup>.

While private physicians may dispense their own medication by ordering raw materials or composite remedies to cooperating *myrepsoi*, in great scale health institutions – *xenones* – matters are by far more complex. Indeed, hospitals in Constantinople – Sampson, Euboulus, empress Eirene, St. Eirene, Kosmidion, Christodotos, Myrhelaion, Mangana, Pantocrator, Lips, Krallis – or further large cities and significant monastic communities<sup>42,43</sup> are offering internal pharmaceutical services.

Thus, in mid-12th century the Pantocrator hospital superintendent is personally responsible for the annual wholesale purchase of generally needed raw materials and several common drugs:

*the nosokomos will be given olive oil ... for the preparation of ointments and plasters ... additionally he shall receive honey to be used as adjuvant, or in syrups and honey drinks, and any other relevant case ... and he will be given vinegar ... and heating wood ... for the preparation of all necessary medicinal stuff ... in early spring he shall receive two hyperpyra for buying medical and auxiliary items, as well as materials for plasters and for any other specialty prepared in the xenon, the panaceas theriac and mithridata excluded ... in the month of May for assembling the herbarium<sup>44</sup>.*

The institution is further constantly updating the supplies: *linseed ... three hyperpyra are spent monthly for acquiring mastic, myrrhe, liban, ammoniac salts and similar simple medical species<sup>45</sup>*. In 1281 the modest Lips *xenon* is as well insisting on adequate provisions: for linseed oil, and for purchasing barley for tisanes<sup>46</sup>.

A great number of galenic forms – *plasters, ointments, syrups, enemas, tisanes, cataplasms, dragees, eye drops, fumigations, powders<sup>47</sup>* –, as well as most sophisticated medicines belong to the everyday practice of the hospitals, and are carefully noticed in numerous dispensaries known as *iatrosophia<sup>48</sup>*. The anthologies are usually collective, as for example *Therapies And Treatments Compiled By Various Scientists According To The Xenon's Order<sup>49</sup>*, but may at times be attributed to experienced practitioners, such as the eminent Ioannis Zacharias Actuarios; or Romanos, *principal of the Myrhelaion royal xenon and Peridoxos, and author of a remarkable manual on Chronic And Acute Diseases<sup>50</sup>*.

Staff members responsible for remedy preparation are clearly stated as *pimentarioi*. The Latin term *pigmentarius* is not fully unknown in the Greek speaking Oriental Roman Empire, and in earlier years connotations are always the same: *those called pimentarioi have carefully researched the roots and species of drugs<sup>51</sup>*; and: *pigmentis are those responsible for fragrances<sup>52</sup>*. In analogous manner 6th century *pimentarioi* are considered as physicians' assistants in what concerns laboratory work: *the physician is ordering, and the*

*pimentarios is serving by manufacturing everything necessary*<sup>53</sup>; and: *pimentarioi are disposing of various instruments, of special and any other adequate equipment because of the physician*<sup>54</sup>. Although late lexicographic entries are often unspecific: *pimentarioi are the botanists... pimenta are the remedies, pimentarios is the myrepsos*<sup>55</sup>, middle Byzantine legal texts mentioning the *infamous pimentarios*<sup>56</sup> dispensing poisonous or otherwise hazardous drugs, are offering a clear depiction of the profession's frame and duties. Thus, a *pimentarios* is employed in the hospital, and is responsible for all procedures connected to preparing medicines:

*pimentarioi are those accountable for acquiring drugs and preserving them in the xenon, and they are further taking care of the remedies ... in the hospitals a pimentarios should care for and preserve remedies*<sup>57</sup>.

Occasionally, the specialties have even been conceived in the *xenon's* laboratory: *about the great decoction of the xenon*<sup>58</sup>. In this frame the Pantocrator *pimentarioi* are given additional annual imbursement for accomplishing the tiresome procedure:

*and for wine and victuals for the pimentarioi, when they are preparing the remedies, approximately eight hyperpyron and forty two measures of wheat, for sieves one theotokion; and in the month of May for assembling the herbarium they are receiving two ancient hyperpyra and nine measures of wheat*<sup>59</sup>.

Pantocrator is equipped with three ordinary and two auxiliary *pimentarioi* subordinated to the chief: *to the physicians, assistants and all others already mentioned will further be added a principal, three ordinary and two auxiliary pimentarioi*<sup>60</sup>. More modeste, the Lips xenon is providing for *two pimentarioi*<sup>61</sup>. At least in later centuries, the principal is depicted wearing a dark red suit, yellow boots and a characteristic conical scarlet hat bearing a vertical white ribbon

(ms *Parisinus Graecus* 2243). He is hired for approximately half the salary of the leading physician, his staff being hierarchically leveled:

*the two chief physicians ... are receiving seven golden hyperpyra each ... and the chief pimentarios three and a half of the same type and one third for victuals; the three ordinary pimentarioi three each and one sixth for victuals, as well as twenty four measures of wheat; the two auxiliary pimentarioi two and a half each, and one twelfth for victuals along with twenty measures of wheat*<sup>62</sup>.

By the end of the 13th century Lips is offering remuneration comparable to the earnings of the *xenon* superintendent, probably bearing no scientific responsibilities, and the physicians:

*three physicians with a salary of forty eight hyperpyra, that is sixteen for each of them ... the superintendent twelve ... and each of the two pimentarioi twelve*<sup>63</sup>.

While *pharmakon* merchants and botanists are at no scientific or financial aspect comparable to *myrepsoi*, the public health system is requesting *pimentarioi* to be highly qualified in pharmaceutical matters. Though this knowledge may be updated in the *xenon* by attending pharmacognostic indoor lectures destined for medicine students:

*there will be one instructor to teach on the art of medicine ... we provide for an instructor to teach the science of medicine ... he will take care of educational matters and teach the assistants and pupils of the xenon's physicians on medicine topics with perseverance and without adjournment*<sup>64</sup>,

a long term *in situ* education in the frame of a guild is obviously the main enrollment assumption for these experienced state employees. It may be assumed that *pimentarioi* are recruited among the *myrepsoi*, having thus no need for any further organizational infrastructure.



A prestigious career is guaranteed for them, and sole the large import activities undertaken by wealthy members of the guild could outrank the benefits of serving in a hospital.

#### BIBLIOGRAPHY AND NOTES

1. κανάβου φύλλα ... ξένην τινά ποιεί μέθην ... εν γαρ τοις Αράβοις τούτο μασσάται αντί οίνου ... νετ σύγκειται εκ τε μόσχου και άμπαρος και ξυλαλόης ινδικής (LANGKAVEL B., Symeon Seth, *Syntagma De Alimentorum Facultatibus*. Leipzig 1868: K329; N17.
2. ζαδοάρ ... γαλάγαν (ms Parisinus Graecus 2316).
3. VARELLA E.A., *Orientalische Elemente In Der Byzantinischen Heilkunde*. *Medicina Nei Secoli* 1995; 7: 485.
4. πολλών και λογίων ουχ ελλήνων μόνον, αλλά και περσών και αγαρηνών και ινδών περί τροφών δυνάμεων συγγραψαμένων ... δειν ωήθην εξ απάντων τα κάλλιστα ερανίσασθαι (B. Langkavel, Symeon Seth, *Syntagma De Alimentorum Facultatibus*. Leipzig 1868: 1)
5. VARELLA E.A., *Experimental Techniques And Laboratory Apparatus In Ancient Greece Drug And Perfume Preparation*. *Medicina Nei Secoli* 1996; 8:191.
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7. έπεμνά σοι πικράν, τή τε κατασκευή και τή επινοία νέαν, και βοήθημα στομαχικόν, τέχνης μεν της αυτής, ηλικίας δε πρεσβυτέρας (Photius Constantinopolitanus, *Epistula Zachariae*, in: MIGNE J.P., *Patrologia Graeca*. Paris 1857/68: CII 840).
8. εκφρακτική κάππαρις, ηδίστη πλέον, όξει μιγείσα φλεγμάτων αναιρέτις (WESTERINK L.G., *Michael Psellus: Poemata*. Stuttgart 1992, 9).
9. έστι δε ευστόμαχον, ουρητικόν (WELLMANN M., *Pedanius Dioscurides: De Materia Medica*. Berlin 1907/14: II 137).
10. και το αφένημα αυτου πινόμενον μετά οίνου κύστει χρήσιμον (ms Palatinus Graecus 77).
11. LAFONT O., *Le Livre Du Préfet De Léon Le Sage*. *Interét Pour La Pharmacie, Revue D'Histoire De La Pharmacie* 2005; 53: 247.

12. μυρεψοί ... μήτε μην σαλδαμαρικήν ή ετέραν τινά συρφετώδη πραγματείαν αποτιθώνται ... αλλ' εμπορευέσθωσαν πεπερι, στάχος, κιννάμωμον, ξυλαλοην, άμβαρ, μόσχον, λίβανον, σμύρναν, βαρζήν, λουλακην, λαχάν, λαζουρην, χρυσοξύλον, ζυγαιαν και όσα άλλα τοιαυτα εις μυρεψικήν και βαφικήν συντελώσιν ... επεισέρχεται η αρμοζουσα αυτοίς πραγματεια ειτε διά Χαλδαιών και Τραπεζουντίων η και εξ άλλων τινών τόπων (KODER J., *Leo Sapiens: Eparchicon Biblion*. Vienna 1991: 10.1).
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14. ο δε αγιώτατος πατριάρχης Λουκάς και μυρεψικά εργαστήρια ... προς των κληρικών ενεργείσθαι απειρηκεν (BLASTARES Matthaeus, *Collectio Alphabetica*. In: POTLES M. & RHALLES G.A., *Σύνταγμα Των Θείων Και Ιερών Κανόνων*. Athens 1859: K32).
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20. εκράτησα λόγω μου ώσπερ μερίδιόν τι ενός εργαστηρίου μυρεψικού και οσπίτιον (*Acta Monasterii Lembiotissae*, in: MIKLOSICH F. & MÜLLER J., *Acta Et Diplomata Monasteriorum Et Ecclesiarum Orientis*. Vienna 1871, p. 285).
21. το μυρεψικόν εργαστήριον το έχον ενοίκιον νομίσματα ιδ' και τα ενοικικά οικήματα τα διακρατούμενα παρά Θεοδώρου του ιατρού εις ενοίκιον νομισμάτων ε' (GAUTIER P., *La Diataxis De Michel Attaliate*. *Revue Des Études Byzantines* 1981; 17: 1,443).
22. έοικε δ' ονν χρήσιμος είναι προς τας ευσομίας εί γε και οι μυρεψοί χρώνται (WIMMER F., *Theophrastus Eresius: Fragmenta*. Paris 1866, 4,58).

23. χρώνται δε αὐτοί οἱ μυρεψοί εἰς τὰς τῶν μύρων στύψεις (WELLMANN M., *Pedanius Dioscurides: De Materia Medica*. Berlin 1907/14, I 109).
24. τὰ ὑπὸ διαφορῶν εἰδῶν συντιθέμενα μύρα χεῖρες πλάττουσι μυρεψῶν καὶ ἐν ἐκ πολλῶν εἶδος ἀποτελοῦσιν (DARROUZÈS J., *Syméon le Nouveau Théologien: Traités Théologiques Et Éthiques*. Paris 1966, 14,1,132).
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32. ὡσπερ εἰ τὸν ἀρίστον ἰατρὸν ἀφέντες φαρμακοπῶλην εἴλοντο (HENSE O. & WACHSMUTH C., *Ioannes Stobaeus: Anthologium*. Berlin 1884/1912: 3,40,8).
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36. ὁ φαρμακεὺς ὁ χρώμενος φαρμάκοις εἰς τὸ κτείνειν (LEONE P.L.M., *Ioannis Tzetzes: Historiae*. Naples, 1968, 8, 239).

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42. MILLER T.S., *The Birth Of The Hospital In The Byzantine Empire*. Baltimore/London 1997.
43. VARELLA E.A., *Health In Mediaeval Thessaloniki*. Thessalonikeon Polis 2001; 5: 46.
44. παραδοθησονται δε τω νοσοκόμω λόγω ποιήσεως των όλων αλοιφών και υπέρ σκευασίας των εμπλάστρων ... ελαίου ... ωσαύτως δοθήσεται τω νοσοκόμω λόγω των βοηθημάτων και των υδροροσάτων και του οξυμέλιτος συν τω υγρώ διοσπολίτη και τω ομφακομέλιτι και υπέρ πάσης ετέρας εξόδου της παρ' αυτού γινομένης δια μέλιτος ... μέλιτος ... δοθήσεται δε αυτώ και οξους ... και ξυλής καυσίμης ... υπέρ εψησεως των χρειωδών ιατρικών ... υπέρ εξωνήσεως των ιατρικών ειδών, των βοηθημάτων, των εμπλάστρων και των λοιπών σκευασιών του ξενώνος άνευ της θηριακής και της μθριδάτης κατά την αρχήν του έαρος λίτρας υπερπύρους δυο ... και κατά τον μαι ον μηνα λόγω του βοτανολογίου (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue Des Études Byzantines 1974; 32, 27: 1082/1114/1209).
45. λινοκόκκου ... υπέρ αγοράς μαστιχίου, σμύρνης, λιβάνου, αμμωνιακού και λοιπών των απλών ιατρικών ειδών ... εκάστω μηνι νομίσματα υπέρπυρα τρία (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue Des Études Byzantines 1974; 32, 27: 1119).
46. υπέρ λινελαίου ... εις εξώνησιν κριθής ήτοι υπέρ πίσης χιλού (DELEHAYE H., *Deux Typica Byzantins De L'Époque Des Paléologues*. Mémoires De L'Académie Royale De Belgique, Seconde Série 1921; 106: 50).
47. αλοιφών ... εμπλάστρων ... υδροροσάτων και οξυμέλιτος συν τω υγρώ διοσπολίτη και τω ομφακομέλιτι, πυριών και κλυστήρων ... χυλαρίων, καταπλασμάτων, ελιγμάτων ... οφθαλμικών, θυμίαμα, κοκκία, ξηρίων, έκλειγμα (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue

- Des Études Byzantines 1974; 32 27: 1082/1114/1119; ms Vienna Nessel XXII: 120).
48. VARELLA E.A., *Pharmazeutische Manuskripte Auf Berg Athos*. 31. International Conference On The History Of Pharmacy, Heidelberg 1993, Proceedings 13.
  49. θεραπευτικά και ιατρεία συντεθείσαι παρά διαφόρων ανδρών κατά την εκτεθείσαν ακολουθίαν του ξενώνος (ms Vienna Nessel XXII).
  50. Ρωμανού ... πρωτομηνυτού του βασιλικού ξενώνος του Μυρελαίου και της Περιδόξου ... διδασκαλία περί οξέων και χρονίων παθών (ms Vienna Med. 48).
  51. οι λεγόμενοι πημεντάριοι επιμελώς εξηρένησαν τας ρίζας και τα είδη των βοτανών (Ephraem Syrus, *Sermones Paraeneticus Ad Monachos Aegypti*. In: PHRANTZOLES K.G., Οσίου Εφραίμ Του Σύρου Έργα. Thessaloniki 1990, p. 54).
  52. α πιγμέντις τους επί των αρωμάτων (BANDY A.C., *Ioannes Lydus: On Powers Or The Magistracies Of The Roman State*. Philadelphia, 1983, p. 162).
  53. ο μεν ιατρός επιτάττει, ο δε πημεντάριος διακονεί τα προς την χρείαν ευτρεπίζων (WESTERINK L.G., *Olympiodorus: In Platonis Gorgiam Commentaria*. Leipzig, 1970, 1,13).
  54. ποιμεντάριοι ... διάφορα όργανα τρούλλα και όσα άλλα τοιαύτα ένεκα του ιατρού παραλαμβάνεται (HAYDUCK M., *Asclepius: In Aristotelis Metaphysicorum Libros A-Z Commentaria*. Berlin, 1888, 154,19).
  55. πημεντάριοι οι βοτανολόγοι ... πιμέντα: φάρμακα, πημεντάριος: μυρεψός (TITTMANN J.A.H., *Iohannes Zonaras: Lexicon*. Leipzig, 1808, 1584,4; SCHMIDT M., *Hesychius Alexandrinus: Lexicon*. Halle, 1861/1862, Π2296).
  56. πημεντάριος προπετής ... πημεντάριος αυθάδης (BURGMANN L. & TROIANOS Sp., *Appendix Eclogae*, Frankfurt/Main: 6, 21; HOLWERDA D. & SCHELTEMA H.J., *Basilicorum Libri LX, Scholia In Basilicorum Libros I-XI*. Groningen 1953/1985: 60, 39, 3, 7; BRANDILEONE F. & PUNTONI V., *Prochiron Legum*. Rome 1895, 40,13).
  57. πημεντάριοι εισιν, οίτινες εισιν αφωρισμένοι επί το τας βοτάνας συλλέγειν και αποτιθέναι αυτάς εν τω ξενώνι, οίτινες και των βοηθημάτων φροντισταί εισιν ... πημεντάριος αν ειή δ' εν τοις νοσοκομείοις την πρόνοιαν και φυλακήν των βοηθημάτων επιτετραμμένος (HOLWERDA D. & SCHELTEMA H.J., *Basilicorum Libri LX, Scholia In Basilicorum Libros I-XI*. Groningen 1953/1985, 60,39,3,7-12).
  58. περί του μεγάλου αποζέματος του ξενώνος (ms Parisinus Graecus 2236)
  59. και λόγω οίνου και προσφαγίου των πημενταρίων, ότε τας σκευασίας ποιούσι, νομίσματα τραχέα εικοσιπέντε, σίτου μοδίους αννονικούς τεσσαρακονταδύο,

- υπέρ κοσκίων θεοτοκίον νόμισμα εν, και κατά τον μάιον μήνα λόγω του βοτανολογίου νομίσματα υπέρπυρα παλαιά εξ και σίτου μοδίους ομοίους εννέα (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue Des Études Byzantines 1974; 32 27: 1209).
60. τω δηλωθέντι τάγματι των ιατρών, υπουργών και λοιπών προστεθήσονται και ούτοι. επιστήκων εις, πημεντάριοι έμβαθμοι τρεις και περισσοί δύο (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue Des Études Byzantines 32 1974; 27: 996).
61. ποιμεντάριοι δύο (DELEHAYE H., *Deux Typica Byzantins De L'Époque Des Paléologues*. Mémoires De L'Académie Royale De Belgique, Seconde Série 1921; 106: 51).
62. τους δύο πρώτους ιατρούς ... ανά νομίσματα χρυσά επτά ... τον επιστήκοντα του πημέντου νομίσματα όμοια τρία ήμισυ τρίτον, υπέρ προσφαγίου νομίσματος ομοίου τρίτον. τους τρεις εμβάθμους πημενταρίους ανά νομίσματα όμοια τρία τρίτον, υπέρ προσφαγίου ανά νομίσματος έκτον και ανά σίτου μοδίους εικοσιτέσσαρας. τους δυο περισσους πημενταρίους ανά νομίσματα όμοια δύο ήμισυ, υπέρ προσφαγίου ανά δωδεκατον και ανά σίτου μοδίους εικοσι (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue Des Études Byzantines 1974; 32 27: 1181-1210).
63. ιατροί ... τρεις μισθός τούτοις νομίσματα οκτώ προς τοις τεσσαράκοντα ήτοι εκάστω αυτών δεκαεξ ... επιστήκων δωδεκα ... ποιμεντάριοι δύο ανά δωδεκα (DELEHAYE H., *Deux Typica Byzantins De L'Époque Des Paléologues*. Mémoires De L'Académie Royale De Belgique, Seconde Série 1921; 106: 51).
64. και διδάσκαλος εις εις το διδάσκειν τα της ιατρικής τέχνης ... διδάσκαλον είναι τυπουμεν οφείλοντα διδάσκειν τα της ιατρικής επιστήμης ... ίνα του έργου της διδασκαλίας επιμελήται και εκδιδάσκη τους παιδας των ιατρών του ξενώνος τα της ιατρικής μαθηματα επιμόνωσ και μετά σπουδής (GAUTIER P., *Le Typikon Du Christ Sauveur Pantocrator*. Revue Des Études Byzantines 1974; 32, 27: 945/1311).

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