The interaction between Greek and Arabic Medical Terms

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Muslims divided science into two distinct categories: First, ***'Ilm al-Ady❶n***[1] **علم الأديان**, (i.e. science of religion or of legitimacy): covering theology; such as the interpretation, the *❑ad◎t❸*, the *qir❶❑❶t*, *al-fiqh*, *☺elm al-kal❶m*, rhetoric, language, syntax, and literature. Second, ***'Ilm al-Abd❶n***[2] **علم الأبدان**, i.e. natural sciences or the science of mental or Wisdom. Sometimes, they are called science ***'Ilm Al-☺A❶jam*** **علم العجم** or **Ancient science**, namely: philosophy, medicine, engineering, astrology, music, magic and chemistry. The second type of science is meant in this paper: namely, the heritage of the Arabs in medicine because medicine is the focus of scientific studies in Islamic civilization, and has a special place and distinct. Arab scholars tries to make science a secular subject and to liberate it from religion.

Here I shall draw some of my findings relating to a type of ***'Ilm al-Abd❶n*** by comparing between the Greek and Arabic medical terms.

Medical terminology has evolved in great measure from the Greek, Latin, and Arabic languages into recent medicine**.** During the Renaissance period, when the science was begun some medical terms of the disease first used by Galen, and pharmacy by Dioscorides have been retained till now. This accounts for the fact that the second most common source of medical root words is the Greek language. Other older roots have their origins in Arabic. This is due to the fact that Arabic scholars were important teachers of medicine through the middle ages.

The Arabs were the first scientists who had gathered Greek medical

knowledge's texts into encyclopedias that also contained their interpretations of the texts. Avicenna's al-*Canon* and Haly Abbas' *Pantegn*^{3}*i* are two of the most influential Arab encyclopedias to be translated into Latin. Their works were an ordered catalogue of known medical knowledge.

The new medical texts came with a whole new set of medical terms both from the Greek texts and from its Arab interpreters.

In the Middle Ages, these Arabic encyclopedias were translated into Latin. Since Latin lacked adequate medical terminology, frequently, in the absence of Latin equivalent, Arabic terms were adopted for the nomenclature of the structures of the body in medicine. This gave a historical and scientific value for the Arabic medical heritage.

As it is well known, the medical heritage of the Arab has a historical and scientific value, and it benefits us on the level of the term, and experiences of Arab scientists in this area should be inspirited. The translation of the medical heritage usually distinguish between two different phases**:** The phase of transference, and readability then the assimilation and understanding.

The phase of transference is prior to the phase of absorption and understanding. Arabs translated medical books from Greek, Syriac, Persian into Arabic, and the phase of absorption began by using the translated knowledge and ended by merging it into the Arabic thought and culture.

The issue of finding the appropriate term in two phases has risen together in varying degrees for finding the accurate Arabic term that will be used in medicine**,** and is able to express the pure and complex concepts, and to call things by their accurate nomenclature.

In the first phase (i.e. transference and receipt), the main problem for the Arab translators was an almost complete lack of technical Arabic terms in return for Greek terms, and they had to have a solution to the problem by going to three basic ways:

1- The transliteration of the Greek term into Arabic either direct or

indirect through the Syriac or Persian language:

ημιτριταιος → أمِطْرِيَطاوس (حمّى شبه ثِلْثية) = **Semi-tertian fever**

ημιτριταιος, α, ον, of a fever, *semi-tertian*[4] *الملاريا الثلثية*, (see Hippocrates Medicus (v BC.) *Epid*.1.2, Galenus Medicus (ii AD.) l.17(1) 233), and for ημιτριταικος, η, ον, (see Ptolemaeus Mathematicus (ii AD.) *Tetr*.199).

επιαλος → إبْيَالوس (حمّى الملاريا) = **Ague**

επιαλος and εφιαλτης, Aeol. επιαλτης (see Alcaeus Lyricus, iii p. 147 (vii/vi BC.) 129; (= 406 L.-P.), Macrobius Grammaticus (iv/v AD.) *Somn*.1.3.7, also επιαλος, *nightmare*, conceived as a throttling demon, Phrynichus Comicus (v BC.)1, Dioscorides Medicus (i AD.) 3.140 (pl.). Dor. εφιαλτας (as nomen proprium), BCH = suppl. 8, 9, v. index IV. 109.94 no. N7, Artemidorus Daldianus Onirocriticus (ii AD.) 2.37, Rufus Medicus (ii AD.) apud Oribasius Medicus (iv AD.) 7.26.177, Strabo Geographus (i BC. / i AD.) 1.2.8; pr. n. of one of the Aloidae, Il. 5.385, Odyssea 11.308, *Salamine de Chypre* XIII. *Testimonia Salaminia* 2: *Corpus épigraphique*, J. 355 (amphora, vi BC.), Pi. *P*. 4.89), and Att. pr. n., cf. Aelius Dionysius Grammaticus (ii AD.) *Fr*.381, *Inscriptiones Graecae*. 1^2.950.92, etc. (Identified with ηπιολης by A.D. Fr. 8.12 (or Apollodorus, v. Sophron Comicus (v BC.) 68 note); επιαλτης (see Suidas Lexicographus (x AD.).

καλοποδιον → قالب = **caliber**

καλοποδιον meaning **caliber** is derived from M. French **calibre** via the Spanish or Italian language, ultimately, from the Arabic substantive ***qalib*** "a mold, last," which perhaps is derived from the Greek substantive καλοποδιον "a

shoemaker's last" lit. It is compound from "little wooden foot" from καλον[5] "wood" + ποδος (gen. of πους "foot"). Arabic also used the substantive in the sense "mold for casting bullets," which is the original lit. meaning in Eng., though the earliest cited sense is the fig. one of "social standing, quality, rank". **Calibrate** is derived from **caliber** and is attested as half-life, with means "unsatisfactory way of living;" the sense in physics, "amount of time it takes half a given amount of radioactivity to decay." (see Douglas Harper, Etymology' Dictionary, 2001 vs**. caliber.** (See Gal. 6.364, Suid.[6] καλοποδαριαι φορμαι *lasts*, and *Edict.Diocl*.9.1.[7]).

πιστακια → الفستق = → **pistachio**

πιστακη meaning **pistachio** الفستق, ultimately from Greek πιστακη, η, pistachio tree[8], *Pistacia vera*, Alciphro Epistolographos (iv AD.) 1.22 (See Diosc. I 124 πιστακια vs., and Ibn Sina II 412, 5.)

σαγαπηνον → سَخْبِنَاج (**Persian**) → **سكبينج** (Arabic) = *Ferula persica*

σαγαπηνον, το, a plant, probably, *Ferula persica*, Galenus op.cit. 12.117; also its *gum*, Dioscorides op.cit. 3.95; and as adj., οπος σαγαπηνος Gal. l.c. 13.567.

αψινθιον → أفسنتين = **wormwood**

αψινθιον, το, *wormwood, Artemisia Absinthium*, Hippocrates Medicus (v BC.) *Morb*.3.11, *Mul*.1.74, Xenophon Historicus (v/iv BC.) *An*.1.5.1, Theophrastus Philosophus (iv/iii BC.) *HP*1.12.1, Dioscorides (i AD.) 3.23. Another kind called αψινθιον θαλασσιον (see Dsc.3.23,5).

2- Literal translation of the term:

αλωπεκια → داء الثعلب = **(fox sickness or alopecia)**

αλωπεκια, η, disease, like *manage in foxes*, in which hair falls off (see Sophocles Tragicus (v BC.) *Fr*.419, and Gal.12.381), pl. *bald patches* on the head (see Aristoteles Philosophus (iv BC.) *Pr*.893[b]38.

οφιασις → داء الحية = **(snake sickness)**

οφιασις, εως, η *bald place on the head, of serpentine* or *winding form*, Gal. 12.381, 10.1004, and *a form of leprosy in which the patient sheds his skin like a snake*, Ps.-Gal.14.757.

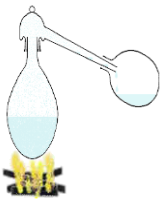
επιληψια → **(المرض الالاهى) = (Sacred Disease = epileptic fit = الصرع))**

επιληψια, η or επιληψις, εως, η *epileptic fit*[9], (see Hippocrates Medicus, *Coac*.587, *Morb.Sacr*.10, Aristoteles Philosophus, *Pr*.960[a]18, etc. (but, *invasion, attack* of disease, Hp.*Morb*.3.16.).

μυος ωτα → أذان الفار = *madwort*

μυος ωτα [10], also μυοσωτις, ιδος, η, *madwort*[11], *Asperugo procumbens*, Dioscorides (i AD.) 2.183. It called also αλσινη, η, *lich-wort, Parietaria lusitanica*, Theophrastus Philosophus (iv/iii BC.) *HP*9.13.3, Dioscorides (i AD.) 4.86.

αμβιξ → الإنبيق = **Alembic**



αμβιξ meaning **alembic**: In modern language, the substantive '**alembic**' is the Arabic substantive *al-anbiq* **(الإنبيق)** means 'still' (the distillation device). It is derived from Greek αμβιξ, meaning a *vessel* narrowing towards the brim, or cup (see Hesychius, Lexicographus (c. v AD.), Athenaeus.11.480d). We have also αμβικος, cap of still (see Posidonius Historicus (II/I BC.) 67.25 E.-K., and Boeckh A., *Corpus Inscriptionum Graecarum*, Berlin (1828–77). 3071.7, and Etymologicum Magnum 80.18, as cap of still (see Dioscorides op.cit. 5, 95, Zosimus, Alchemista (iii / iv AD.) p.141 B.).

αμβυξ, perhaps = αμβιξ, (see Herodianus Grammaticus (ii AD.) 1.44, al**).**

It is to be noticed that that Greek letter μ becomes ن in Arabic language

because when the letter م immediately followed by the letter ب, without any vowel coming between them, ن takes the sound of م **as** عنبر **ambar** not **nbar**[12].

3- Arabicised the Greek terms:

ξηριον → **ksirin** (**Syriac**) → **الإكسير** (Arabic) = **elixir**

ξηριον meaning **elixir** **الإكسير** (*al-Iksīr*): two terms have been called elixir: (1) the philosopher stone[13]; (2) medicinal potion (L. *medicamentum siccum*). The Arabic substantive is derived from Greek ξηριον "*desiccative powder* for putting on wounds" (see P. Oxy. 1142.7 (iii AD.)[14] and Alex. Trall.1.15[15], The substantive can be written without iota (see Aet. 6. 65 al., ξηρον[16]; Alexander Aphrodisiensis Philosophus (iii AD.) Pr. 1.150). The transfer of the Greek medical term into Arabic has two verbal types; either direct from Greek or indirect from Greek through Syriac or Persian.. Thus, the term **اكسير** is subjected to some Arabic rules, (1) ξηριον becomes **إكسير** on the measure of ***If◎◎l*** **(وزن إفعيل),** (2) A syllable cannot begin with two consonant, the first of which is destitute of a vowel, as *sf* or *fl*. Foreign words, which commence with a syllable of this sort, on passing into the Arabic language, take an additional vowel **(*alif*)[17], usually before the first consonant; as** σπογγος → **إسفنج**, Πλατον → **أفلاطون** and ξηριον → **إكسير**). Sometimes the final ending of the Greek substantive is elision such as ξηριον → **إكسير** or **left** such as αασαρον → **أسارون**

σταξ → **استَقص** **(pl. استقصات)** = **drop**

σταξ, perhaps from σταγων, ονος, η *drop* (irreg. Nom pl. σταγες) (see Apollonius Rhodius Epicus (iii BC.) 4.626). It is to be noticed that the Arab scientists used this substantive in its plural form. So **استَقصات** was arabicised by using **the**

pluralis fractus (**جمع تكسير**) which alters singular to plural by adding ***alif*** and ***t*** since the substantive is of foreign origin such as **سرادق → سرادقات** (awnings, tents) and **بيمارستان → بيمارستانات.** (Hospitals) It is to be noticed also the exchanging of the letter **ς to ص** which terminates the substantive since they are of the same group (the sibilants' letters **ز ،س ،ص**).

μυρσινη → آس (in Egypt called مرسين) = myrtle

μυρσινη, η, *myrtle,* (L. *Myrtus communis*), (see *Inscriptiones Graecae* 1^2.313.150, 2^2.949.18, 1235.14, Theophrastus Philosophus (iv/iii BC.) *HP*1.14.4, etc. Archilochus Lyricus (vii BC.) 29, Lysippus Comicus (v BC.) 9, Alexander Rhetor (ii AD.) 98.25, **Aristoteles** Philosophus (iv BC.) *HA*627^{b}18, and **μυρσινινος,** η, ον = **μυρρινος**, *of myrtle*, Dsc.1.39, and **μυρσινων,** ωνος, ο, *myrtle-grove*, Id.*Ra*.156, Aesopus Fabularum Scriptor 194, Philostratus Sophista (ii/iii AD.) *Im*.2.1.

It may be noticed also the similarities in Arabic to Greek words: on meeting **κραμβη,** you may notice that the Arabic for "**cabbage**" **kromb**[18].

Taking **Avicenna**"s second book "Simple medicament" as an example, and by analysis of the botanic names presented in this book showed that literal translation was found in 14 words (4.964539 %), Arabization was found in 28 words (9.929078 %), transliteration was found in 37 words (13.12057 %) and translation was found in 205 words (72.69504 %). The following table and figures summarizes these results.

Table 1: Methods of transfer of medical terms

Methods of transfer	Number of words	Percent
Literal translation	14	4.964539 %
Arabization	28	9.929078 %
Transliteration	37	13.12057 %
Translation	205	72.69504 %

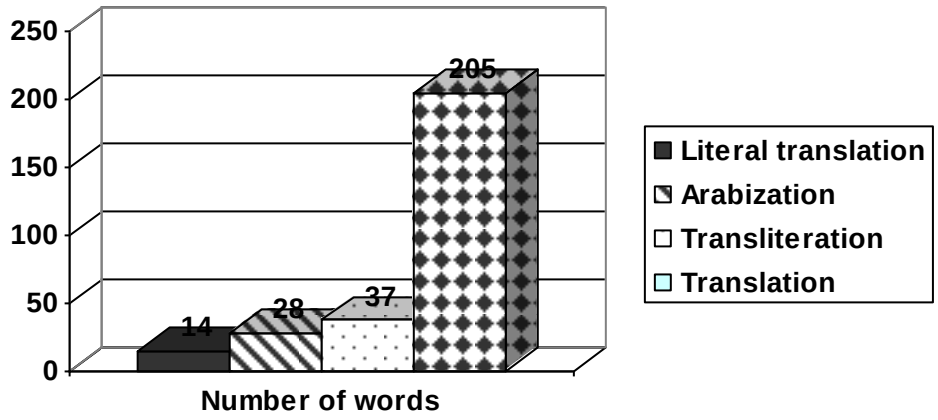


Fig 1: Methods of transfer of medical terms by number of words

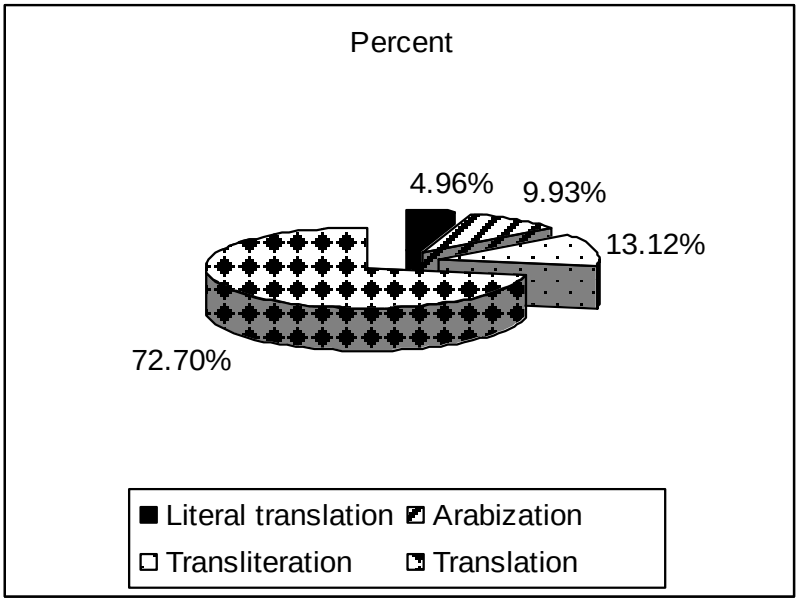


Fig 2: Methods of transfer of medical terms by percent

Full analysis of the only Botanic Greek[19] terms in Ibn Sina' Al-Canon fi Al-ﻉ❶ib[20], the second book, the second tractate is shown in the following tables:

Literal translation 14 words		Arabization 28 words			
μυος ωτα	آذان الفار	μυρσινη	مرسين (in Egypt), آس	γεντιανη	جنطيانا
αστηρ Αττικος	أسطاروس أطيقوس	σκιλλα	أشقيل وهو سقلا	αμωμον	حماما
Ποταμογειτων	جار النهر	αγαλοχον	أغالوجى	δαυκος	دوقوا
ελλεβορος λευκος	خربق أبيض	επιθυμον	افيثمون	ζιγγιβερι	زنجبيل
ελλεβορος μελας	خربق أسود	αψινθιον	افسنتين	σαγαπηνον	السكبيذج
πεντεφυλλον	خمسة أوراق	ακανθιον	أقسون	σιλλυβον	سلوثن
ιππουρις	ذنب الخيل	ακανθιον	أقسون	σησαμον	سمسم
τριχομανες	شعر الغول	ιρις	ايرسا	κανναβις	قنب
σικυς ημερος	قثاء بستانى	πεπλος	بابلس	καππαρις	كبر
σικυς αγριος	قثاء برى قثاء الحمار	παπυρος	بردى	καρω	كراويا
κραμβη αγρια	كرنب برى	βαλσαμον	بلسان	κομινον	كمون
βουγλωσσον	لسان الثور	ποντικα	بندق	μηον	مو
αρνογλωσσον	لسان الحمل	θερμος	بندق	ναρκισσος	نرجس
αμυγδαληγλυκεια	لوز حلو	θαψια	تفسيا	ροδα	ورد

Transliteration
37 words

εβενος	أبنوس	σισαρον	سيسارون
ασαρον	أسارون	σεσελις	سيساليوس
στοιχας	الأسطوخوذوس	σιον	سيون
ιτεα	أطا	τριφυλλον	طريفلن
ακακια	أقاقيا	αγαρικον	غاريقون
αλυσσον	ألوسن	γαλιον	غاليون
αναγαλλις	أناغالس	πρασιον	فراسيون
ηδυσαρον	ايدوصارون	πιστακια	فستق
ανησον	انيسون	πετροσελινον	فطراساليون
βρεττανκη	برطانيقى	φου	فو
βολβος	بلبوس	καρδαμωμον	قردمانا
χελιδονιον	خاليدونيون	κοστος	قسط
χαμαιλεων	خامالاون	κισσος	قسوس
χονδρος	خندروس	κενταυρειον	قنطوريون
δρυοπτερις	دروبطارس	χαμαιδρυς	كمادريوس
σφονδυλιον	سفندوليون	χαμαιπιτυς	كمافيطوس
σκαμμωνια	سقمونيا	λοβια	لوبيا
σκορδιον	سقورديون	λειμωνιον	ليمونيون
συμφυτον	سومفوطون		

Translation 205 words

βραθυ	أبهل	ευζωμον	جرجير	περιστεριον	رعى الحمام
φυτον	أترج	σταφυλινος	جزر	ελαφοβοσκον	رعى الأبل
κοκκυμηλεα	آجاص	πολιον	جعدة	ροα	رمان
σχοινος	أذخر	σησαμοειδες	جلبهنك	αριστολοχεια	زراوند
βρυον	أشنة	βαλαυστιον	جلنار	μεσπιλον	زعرور
παρθενιον	أقحوان	συκαμορον	جميز	κροκος	زعفران
μελιλωτος	أكليل الملك	καρυα βασικικα	جوز	αλισμα	زمارة الراعى
παλιουρος	أم غيلان	θυμος	حاشا	ανθυλλις	الزهره

οξυακανθα	أنبرباريس	δαφνιδες	حب الغار	υσσωπος	زوفا يابس
σιλφιον	انجدان	τερμινθος	حبة الخضرا	πανακες Ασκληπι<ει>ον	زوفرا
ακαληφη	أنجرة	σκολυμος	حرشف	αγριελαια	زيتون
ανθεμις	بابونج	καρδαμον	حرف	μαλαβαθ-ρον	ساذج
ακανθα λευκη	باذاورد	πηγανον αγριον	حرمل	πηγανον	سذاب
μελισσοφυλλον	بادرنجويه	τριβολος	حسك	λυχνις στεφανωματικη	سراج القطرب
ωκιμον	بادزج	ελξινη	حشيشة الزجاج	πτερις	سرخس
κυαμοςΕλληνικος	بقلا	λυκιον	حضض	ανδραφαξυς	سرمق
βαλανος	بان	τηλις	حلبه	κυπαρισσος	سرو
αδιαντον	برسياوشان	λαπαθον	جماض	βηχιον	سعالى
αρτεμισια	برنجاسف	ερεβινθος	حمص	θυμβρα	سعتر
ψυλλιον	بزرقطونا	κυπρος	حناء	κυπερος	سعد
λινοσπερμον	بزر كتان	λωτος	حندقوقى	κυδωνια	قودنيا
μακιρ	بسباسه	πυροι	حنطه	ασπληνος	سقولوبنداريون
κουραλιον	بسد	κολοκυνθα αγρια	حنظل	σευτλον	سلق
πολυποδιον	بسفايج	λευκη	حور	κασσιας	سليخة
κρομυον	بصل	αιγειρος	حور رومى	ρους	سماق
πολυγονον	بطباط	μολοχη	خبازى	σμυρνιον	سمرنيون
τερμινθος	بطم	σινηπι	خردل	ναρδος	سنبل
πεπων	بطيخ	κερατια	خرنوب	κολχικον	سورنجان
ανδραχνη	بقلة حمقاء	θριδαξ	خس	κρινον	سوسن
βλιτον	بقلة يمانية	μηκων	خشخاش	καπνος	شاهترج
δρυς	بلوط	σατυριον	خصى الثعلب	ανηθον	شبت
υοσκυαμος	بنج	ορχις	خصى الكلب	πιτυουσα	شبرم
αγνος	بنجنكشت	αλθαια	خطى	κεδρος	شربين
ον	بنفسج	ασφοδελος	خنثى	αλφιτον	شعير
αφακη	بيقية	Περσικα μηλα	خوخ	ανεμωνη	شقائق
νασκαφθον	بنك	ασπαλαθος	دار شيشعان	ακτη	شل
βουφθαλμον	بنك	κιναμωμον	دار صينى	γογγυλη	شلجم
φλομος	بوصير	ιξος	دبق	αγχουσα	شنجار
μηλεας	بوصير	πτελεας	دردار	μελανθιον	شونيز
μορεα	توت	νηριον	دفلى	σεριφον	شيح
ερυσιμον	تودرى	πτατανος	دلب	λεπιδιον	شيطرج
συκα	تين	αιγιλωψ	دوسر	αιρα	شيلم
σκορδου	ثوم	μαραθον	رازيانج	αλυη	صبر
αγρωστις	ثيل	αλενιον	راسن	στροβιλοι	صنوبر
κενχρος	جاروس	ρα	راوند	φακος	طحلب
πανακες	جاوشير	μηδικη	رطبه	μυρικη	طرفاء

Translation (Cont.)
205 words

στροβιλοι	صنوبر	κολοκυνθα εδωδιμος	قرع	λαθυρις	ماهوبدانة
φακος	طحلب	καλα.μων	قصب الذريرة	φιλυρα	محلب
μυρικη	طرفاء	καλα.μος αρωματικος	قصب	μελια	مران
πυρεθρος	عاقر قرحا	ασκληπιας	قنابرى	σαμψουχον	مرزنجوش
φακος	عدس	αβροτονον	قيصوم	μελισσοφυλλον	مرو
λεοντοπεταλον	عرطنيثا	λιγυστικον	كاشم	δικταμινον	مشك طرامشير
αρκευθις	عرعر	στρυχνον	كاكنج	Αρμενιακα μηλα	شمش
χελιδονιον μεγα	عروق الصباغين	βατραχιον	كبيكنج	σχινος	مصطكى
κηκις	عفص	τραγακανθα	كثيرا	σταφις αγρια	ميويزج
βατος	عليق	πρασον κεφαλωτον	كراث	αμι	نانخواه
σταφυλη	عنب	οροβος	كرسنة	φοινιξ	نخل
στρυχνον	عنب الثعلب	σελινον	كرفس	ηδυοσμον	نعناع
ραμνος	عوسج	αμπελος οινοφορος	كرم	ερπυλλος	نمام
δαφνη	غار	κοριον	كزبرة	βρομος	هرطمان
ευπατοριος	غافت	ακακαλλις	كزمازك	νυμφαια	نيلوفر
ιτεα	غرب	υδνον	كمأة	σερις	هندبا
αμπελος λευκη	فاشرا	απιος	كمثرى	ασπαραγος	هليون
αμπελος μελαινα	فاشرستين	στρουθιον	كندس	ακορον	وج
γλυκυσιδη	فاوانيا	κισθος	لاذن	ιστατις	وسمه
ραφανις	فجل	περσαια	اللبخ	μαναδραγορας	يبروح
πεπερι	فلفل	ελξινη	لبلاب	τιθυμαλλον	يتوع
ακιος	فلنجمشك	αρον	لوف	ακορον	ينبوت
καλαμινθη	فودنج	χαμελαια	مازريون		
ερυθροδανον	فوة الصباغين	γλαυκιον	ماميثا		

Notas

[1] *The Cambridge History of Science*: Eighteenth-century science / edited by Roy Porter, et al. Published by Cambridge University Press, 2003, Page 670.

[2] Rahman, A. 1996. A Perspective of Indian Science of Tenth-Eighteenth Centuries. In *Science Philosophy and Culture- Multi Disciplinary Explorations* (Part I) Edited by D.P. Chattopadhayaya and Ravinder Kumar. New Delhi: PHISPC. Pp. 396-426.

[3] Charles S. F. Burnett, Danielle Jacquart (eds.), *Constantine the African and ʿAlī Ibn Al-ʿAbbās Al-Magūsī: The Pantegni and Related Texts*. Leiden: Brill, 1995.

[4] Malaria was a common and endemic disease in the Classical era (see Sallares R. *Malaria and Rome*, Oxford, University Press, 2002, 1-123). Asclepiades (2nd century BC), while confirming the high incidence of periodic fevers in Rome, stressed the seriousness of quotidian fevers which often caused serious brain disease. (see Retief FP, Cilliers L. *Malaria in Graeco-Roman times*. Acta Classica 2004; 67: 127-137.). In the 1st century the encyclopaedist, Celsus, clearly described three kinds of periodic fevers which almost certainly were malaria, viz. quotidian, ***tertian*** and *quartan* fevers. In an extraordinary observation he mentioned that tertian fevers would be mild when days between fever peaks were a pyrexia (benign tertian malaria), but more serious when fever never completely abated – malignant tertian malaria according to the classical description given above, and called ***hemitritaion*** (semi-tertian fever) by himself. Pliny the Elder (Pliny the Elder, *Natural History*, 28. 23, 83; 29.17.63; 30.98) summarized existing therapeutic regimens, including herbal remedies and magical procedures(see Francois Retief, Louise Cilliers, Pyrexia and Malaria in Antiquity, 2006, Vol. 96, No. 8 SAMJ p. 687 ff.).

[5] καλον, το, *wood*, καλον εν ιαρῳ πεφυκος *Berl.Sitzb.*1927.157 (Cyrene); elsewhere only in pl. καλα = ξυλα, *logs*, for burning, καγκανα κ. *h.Merc.*112; παλαιθετα κ. Call.*Fr.*66c; τα κ.και τους ανθρακας Ion Trag.29; also, *timber* for joiner's work, επικαμπυλα κ. Hes.*Op.*427; esp. of ships, ποττα καλα (καλα cod.) Ar.*Lys.*1253; ερρει τα καλα the *ships* are lost (καλα codd.), X.*HG*1.1.23, Plu.*Alc.*28. (καλον and κηλον (q.v.) perh. fr.).

[6] Suidas Lexicographus (x AD.) VS. καλοπδαριαι.

[7] *Edictum Diocletiani*, ed. T. Mommsen & H. Blümner, *Der Maximaltarif des Diocletian*, Berlin 1893; suppl. *CIL* iii pp. 1926 ff., 2208 ff, 2328[57] ff.: cited where possible by Mommsen's chaps. & lines, recently found portions by place of discovery *Diokletians Preisedikt. Texte und Kommentare*, S. Lauffer, Berlin 1971.; (*Aeg.* = Aegira; *Clit.* = Clitor; *Delph.* = Delphi; *Troez.* = Troezen); *Geronthr.* = *IG*5(1)1115; *Gyth.* = 5 (1)1148.

[8] Collins English Dictionary (1979), vs. pistachio.

[9] In ancient times, epilepsy was known as the "Sacred Disease" because people thought that epileptic seizures were a form of attack by demons, or that the vision experienced by persons with epilepsy were sent by the gods.(see Epilepsy, http://en.wikipedia.org/wiki/Epilepsy, and Harper, Douglas (2001). "epilepsy". Online Etymological Dictionary. Retrieved on 2005-06-05.).

[10] μυς, ο, *mouse* or *rat*, and ους, το, gen. ωτος, *ear*, *auricle* (see LSJ vs. μυς, and ους).

[11] Madwort is a low-growing Eurasian plant (Asperugo procumbens) having rough stems and small blue flowers. Alyssum, genus of low-growing, mostly perennial plants, also called madwort. Golden tuft, or rock madwort, and yellow tuft are spring-flowering.

[12] Wright, W., *A Grammar of the Arabic Language*, Cambridge 1967, p. 7.

[13] The **philosopher's stone** (**L.** *lapis philosophorum*; Gr. χρυσοποιια, η "*the making of gold*") is a legendary substance, supposedly capable of turning inexpensive metals into gold.; it was also sometimes believed to be an elixir of life, useful for rejuvenation and possibly for achieving immortality. In the 8th-century, Arab alchemist Jabir ibn Hayyan analyzed each classical element in terms of the four basic qualities of hotness, coldness, dryness, and moistness. Fire was both hot and dry, earth cold and dry, water cold and moist, and air hot and moist. He further theorized that every metal was a combination of these four principles, two of them interior and two exterior. From this premise, it was reasoned that the transmutation of one metal into another could be affected by the rearrangement of its basic qualities. This change would presumably be mediated by a substance, which came to be called ***al-iksir*** in Arabic. http://en.wikipedia.org/wiki/Philosopher%27s_stone#cite_note-3

[14] Oxyrhynchus Papyri, 1142.7, ed. B. P. Grenfell & A. S. Hunt, London 1898. ξηριον (δραχμων) ιδ.

[15] Alexander Trallianus Medicus [Alex.Trall.] (vi AD.) 1.15 κριθαι ξηριον επιπασσομεναι τοις ελκεσι.

[16] Aethlius Historicus v B.C. (?) Aët.6.65, αι ανιον ωκιμου καρφη ξηρα κοπεντα μελανθιον λειον ξηρον η θυμον ζυ μῃ φυραα και ει τεφραν εγκρυψα, οταν οπτηθῃ, λειωα χρω.

[17] Wright, W., op. cit. & 26 p. 20.

[18] See W. G. Waddell, A Teacher of Classics in Egypt, The Classical Journal, Vol. 28, No. 7 (Apr., 1933), p 489.

[19] For Greek botanic terms see Pedanius Dioscorides Anazarbeus, *De Matteria Medica*, ed. Max Wellmann, Berolini 1907.

[20] For Arabic botanic terms see Avicenna, *Al-Canon fi Al-Ṭib*, Arabic version, ed. Boul⑨q 1284 AH./1877 AD.