Etymological Review on Chemical and Pharmaceutical Substances of the Oriental Origin

1Peyman Mikaili, 2Massoumeh Sharifi, 3Jalal Shayegh and 4Shadi Sarahroodi
1Department of Pharmacology, School of Medicine, Urmia University of Medical Sciences, Urmia, Iran
2Islamic Azad University, Urmia branch, Urmia, Iran
3Department of Veterinary Medicine, Faculty of Agriculture and Veterinary, Shabestar Branch, Islamic Azad University, Shabestar, Iran
4Department of Physiology and Pharmacology, School of Medicine, Qom University of Medical Sciences, Qom, Iran

Abstract: The word of “alchemy” remembers the golden age of oriental flourishing of the chemical and medicinal sciences. In this paper, we have reviewed some of these words of oriental origin, including Arabic, Persian, Sanskrit, Hindi, Hebrew and Syriac. Some words have been passed through from one language to another. These borrowings are mentioned as a history of the words. These descriptions may be useful for full comprehension of the current meanings and the exact original meanings of the chemical names, especially for the students of related fields.

Key words: Arabic, chemicals, classical medicines, etymology, Islamic medicine, Persian, pharmacy

INTRODUCTION

Although the western, especially Greek and Roman sources (Riddle, 1985; Beck, 2005) for sciences have the core importance (Scarborough, 1978; Riddle, 1985; Collins, 2000), eastern sources for medicine and pharmacy are the precious legacy of human history (Singer, 1927; Izzo et al., 2002; Jonas, 1999). Different people of oriental origin have shares in this common human treasure, including Chinese (Yang et al., 2009), Hindustani (from Sanskrit and Hindi sources), Persian (Farsi, Pahlavi and Avesta sources) (Mousavizadeh and Ansari, 2005; Bekhradi, 2004) and Arabic (Ahmad et al., 2006) and Hebrew sources. According to the best knowledge of us, there are no independent article in the literature merely dealt with these medicinal and pharmaceutical terms of oriental origin (Pavord, 2005). We have tried in this column to evaluate the currently used chemical and pharmaceutical terms in modern medical sciences, which are derived from different oriental sources and languages. The sources of following languages have been investigated: Akkadian or Acadian, Arabic, Avesta, French, Hebrew, Hindi, Latin, Persian, Portuguese, Sanskrit, Spanish, and Syriac

METHODOLOGY

In this study, we reviewed several sources for collecting data about the terminology used for describing the chemical and pharmaceutical substances of the Oriental origin (El-Gammal, 1997; Cupp, 1999; Givens et al., 2006; Heilmeyer, 2007). Ultimately, we choose the valuable book of Elsevier’s Dictionary of Chemoetymology (Senning, 2007); also, we reviewed some other sources mentioned in the bibliography of this book. All chemical and pharmaceutical substances mentioned in this book, of the Oriental origin were selected. After preparation the material, all scientific names were etymologically analyzed. For etymology of scientific names, we tried to use some standard sources for scientific nomenclature. For etymology of words from oriental languages, we used some valuable etymological sources of different world language families, including Semitic and Indo-European. The compound names have been divided to their components and then were etymologically analyzed.


- absinthe also as absinth; derived ultimately form L. Absinthium, from Gr. apsinthion wormwood; compare with the specific epithet of the species name Artemisia absinthium common wormwood (Senning, 2007); ultimately possibly from Pers. aspand and sipand (Klein, 1983).
• alchemy derived from Ar. al-kīmīyā alchemy, the prefix particle of al- is the definite article in Ar. language; Ar. word ultimately from Gr. chemeiā chemistry, the final etymology is unclear. Some suggest it is from Gr. chumbos juice, from Gr. chēnīn to pour (Senning, 2007). Some authors derived it from Gr. Chēmīā Blackland, hence Egypt (Klein, 1983).
• alcohol derived from Ar. al-kahil powder, referring to the alchemistic procedure of reducing samples, through several purification steps, to a powder, the supposedly pure essence of the substance in question; thus alcohol is the essence (or spirit) of wine; the supposedly pure essence of the substance in question; and suffix -ium (Senning, 2007).
• alizarin C9H14O6, ultimately derived from Ar. al-asara madder root, and suffix -ine (Senning, 2007).
• alkali derived from Ar. al-qilī charred ashes of the saltwort, the roasted (Klein, 1983).
• alkanin C23H38O3 derived from the genus name Alkanna (herbs), ultimately from Ar. al-hinna henna, and suffix -ine (Senning, 2007).
• alli derived from the genus name Allium garlic, from L. allium garlic, ultimately probably from Skr. aluka edible root of the aroid plant Amorphophallus campanulatus (Senning, 2007).
• aloin C21H22O9, derived from aloe, ultimately from Skr. agaru agalloch, and suffix -ine (Senning, 2007).
• amber (C10H8O)n, ultimately derived from Ar. anbar ambergris (Partridge, 1966).
• anandamide C16H25NO, derived from Skr. ananda bliss and amide, referring to this compound’s psychopharmacological properties (Senning, 2007).
• aniline C6H5N, derived from Ar. al-nil indigo plant, ultimately from Skr. nīla dark blue, referring to the fact that aniline was first obtained by degradation of indigo (Partridge, 1966).
• antara derived either from Gr. ant(i)- and Gr. arada line, row or from Skr. antara the other (Senning, 2007).
• antimony derived from L. antimonium antimony (Sb), ultimately from Ar. ithmiid antimony, probably borrowed from Gr. stimimi, variation of stibí whence L. stibium adopted in Chemistry, compare Sb symbole (Partridge, 1966).
• arabinose C5H10O5, ultimately derived from gum arabic and suffix -ose (Senning, 2007).
• arsenic As, derived from Gr. arsenikón yellow orpiment, ultimately from Syr. zarnīg yellow orpiment, compare Av. zarangī gold (Partridge, 1966).
• atidane C19H31N, derived from atis plant (Aconitum heterophyllum Wall.), from Hind. atis atis plant, and suffix -ante (Senning, 2007).
• azadiractin C35H44O16, derived from the genus name Azadirachta (neem tree), from Pers. azad dirakh āt neem tree, literally free or noble tree, and suffix -ine (Senning, 2007).
• azafin C53H50N derived from Sp. azafanillo safflower, ultimately from Ar. alzafaran saffron, and suffix -ine (Senning, 2007).
• azurite Cu₃(PO₄)₃(OH)₂, derived from L. azura ultramarine, via Ar. al-lazaward, form Pers. lājward, ultimately after the town of Lajward, Turkestan, and suffix -ite, referring to this mineral’s blue color (Klein, 1983).
• behenic acid C32H44O2, derived from ben or behen, from Ar. ban seeds of any species of the genus Moringa (Senning, 2007).
• benzoin a resin, derived from Fr. benzoin an odoriferous resin, ultimately from Ar. lubān āwē Javanese incense (Klein, 1983).
• berberine derived from L. berberis barberry, from Ar. barbar barberry (Partridge, 1966).
• berbamine C8H8N2O derived (with contraction) from the genus name Berberis (barberry), from Medieval L. barbaris barberry, and amine (Senning, 2007).
• bikhaconitine C35H44O16, coined by contraction of bikh (Aconitum spicatum Stapf.), derived from Hind. bikk poison, aconitis, and suffix -ine (Senning, 2007).
• borax (tincal) NaB₄O₇·10H₂O, from Ar. baūraq also buraq, ultimately derived from Pers. būrah borax, soda, literally white (Klein, 1983).
• bronze (Cu,Sn), ultimately derived from Pers. birinj bronze (Partridge, 1966); according to another assumption from L. aes brundusim metal from Brundisium, now Brindisi, Italy (Senning, 2007).
• bungarotoxin derived from the genus name Bungarus (krait), ultimately from Skr. bhūraga krait, and toxin (Senning, 2007).
• caffea ultimately derived from Ar. qahwa coffee, from Kaffa or Kāfā a district in southwestern part of Ethiopia (Klein, 1983).
• carmin ultimately derived from Ar. qirmız kermes and L. minium cinnabar (Partridge, 1966).
• carchamin also known as carchamic acid, C₃H₄O₂₂, derived from the genus name Carthamus (safflower), ultimately from Ar. qartam safflower, and suffix -ine (Senning, 2007).
• cassis acid also known as rhein, C₁₄H₂₂O₇, derived from the genus name Cassia (herbs, shrubs, trees), ultimately from Hebr. qetzfīa and cassis (Klein, 1983).
• cathinone C₃H₇NO, derived from the genus name Catha (khat), from Ar. qat khat, and suffix -ine(e), and suffix -one (Senning, 2007).
• champacol $C_{19}H_{22}O_4$, derived from champac (Michelia champaca), from Skr. campaka champac, of Dravidian origin, and suffix -ol (Senning, 2007).
• chavi® derived from the genus name Chavica (peppers). Etymology is unclear. Some authors suggest it is from Skr. cavika a pepper. It is perhaps named after a botanist (Partridge, 1966).
• chavibetol $C_{10}H_{12}O_2$, derived (with contraction) from the species name Chavica betel betel pepper, from Skr. cavika a pepper and Port. betel betel, ultimately from Tamil vellilai Piper betle, and suffix -ol (Senning, 2007).
• cinnamic acid $C_9H_8O_2$, derived from cinnamon, L. Cuminum cyminum, from Gr. kinnammon, ultimately derived from Hebr. kinnam, and suffix -ene (Klein, 1983).
• cymene $C_{10}H_{14}$, derived from the specific epithet of the species name Curcuma aromatica, and suffix -ene (Senning, 2007).
• curcumín $C_{15}H_{20}O_6$, derived from the genus name Curcuma, from Skr. kumin, from Gr. kinnammon, and suffix -ene (Klein, 1983).
• cumene $C_{9}H_{12}$, derived from the specific epithet of the species name Cuminum cyminum, and suffix -ene (Senning, 2007).
• cymene $C_{10}H_{14}$, derived from the specific epithet of the species name Cuminum cyminum, and suffix -ene (Senning, 2007).
• daturine also known as duboisine, hyoscyamine, C_{15}H_{19}NO_3, derived from dhurra (durra, Jimson weed, sacred datura), from Modern L. Datura meteloides, and suffix -ene (Senning, 2007).
• daturine also known as duboisine, hyoscyamine, C_{15}H_{19}NO_3, derived from dhurra (durra, Jimson weed, sacred datura), from Modern L. Datura meteloides, and suffix -ene (Senning, 2007).
• fustin $C_{15}H_{11}O_6$, derived from fustet (Rhus cotinus L.), ultimately from Ar. fúst-Aug. fúst-q sustet, from Pers. pistah and suffix -ine(e) (Klein, 1983).
• galangin $C_{14}H_{10}O_6$, derived from galanga root (Alpinia officinarum Hance), ultimately from Ar. khānān-galanga root and suffix -ine(e) (Senning, 2007).
• gelsemine $C_{18}H_{22}N_2O_6$, derived from the genus name Gelsemium jessamine, ultimately from Ar. yāsamān jasmine, and suffix -ine(e) (Senning, 2007).
• guaran also known as guar gum, derived from guar (Cyamopsis tetragonoloba (L.) Taub.), from Hind. gua and suffix -an (Senning, 2007).
• gypsum CaSO_4·2H_2O, ultimately derived from Gr. guypsum chalk, gypsum, of Semitic origin, compare Akk. gāšu, akin to Ar. jibs plaster, mortar (Klein, 1983).
• harm(inal) derived from harmal (Peganum harmala) (Fagan harmala) (Senning, 2007).
• hashish derived from Ar. hashish dried grass, hemp (Partridge, 1966).
• jasmo derived from the genus name Jasminum jasmine, ultimately from Pers. yasmin, yasman jasmine (Partridge, 1966).
• jasper SiO_2, derived from Gr. iaspis jasper, from Hebr. jāsh-pēh jasper, compare Ar. yashb (Partridge, 1966).
• kermesic acid $C_{16}H_{10}O_8$, derived from kermes, ultimately from Ar. qīrmīz vivid red (Partridge, 1966).
• kermesite SbS_2O, ultimately derived from Ar. qīrmīz vivid red and suffix -ite, referring to this mineral’s red color (Senning, 2007).
• khellin $C_{18}H_{10}O_4$, derived from khellah, from Ar. akhilla toothpick plant, Anmīn usnān Lam. and suffix -ine(e) (Senning, 2007).
• laccc(a) derived from Modern L. lacca lac, ultimately from Skr. lākkālac (Partridge, 1966).
• lazulite also known as blue spar, klaprothite, (Mg,Fe)Al_2(PO_4)(OH)_2, derived from Ar. ḥāshīq sky and suffix -ite, referring to this mineral’s blue color (Klein, 1983).
• lime CaO, ultimately derived from Skr. layate he clings, he sticks (Partridge, 1966).
• magainin derived from Hebr. maghen shield, and suffix -ine(e); referring to these polypeptides antimicrobial properties (Senning, 2007).
• manose $C_{10}H_{10}O_6$, derived from manna, from Hebr. mān gift, and suffix -ose (Klein, 1983).
• massicotite also known as massicot, PbO, derived from Ital. marzacotta potter’s glaze, ultimately from Ar. sabb qubti Egyptian alum, i.e. iron and/or aluminum sulfate, and suffix -ite (Senning, 2007).
• meteloidine $C_{18}H_{22}NO_4$, derived from the specific epithet of the species name Datura meteloides DC. (Jimson weed, sacred datura), from Modern L. meteloides resembling Datura metel, garden
thornapple, from metel nut, from Ar. jouz mathal metel nut, and suffix -idin(e) (Senning, 2007).

- nacre $A_{2}SiO_{3}(OH)$, derived from Fr. nacre mother-of-pearl, ultimately from Ar. naqqārah bowl, and suffix -ite (Partridge, 1966).

- naphtha derived from Gr. náphtha naphtha, ultimately from Pers. neft naphtha (Klein, 1983).

- naringin $C_{27}H_{32}O_{14}$, ultimately derived from Skr. námphtha naphtha, and suffix -ose (Senning, 2007).

- nimb derived from Skr. nimba neem tree, Azadirachta indica A. Juss (Senning, 2007).

- nupharidine $C_{15}H_{23}NO_{2}$, derived from the genus name Nuphar water lilies, ultimately from Skr. nilotpala nuphar, formed from Skr. nila dark blue and Skr. utpala nuphar blossom, and suffix -ide (Senning, 2007).

- opal SiO$_2$·nH$_2$O, ultimately derived from Skr. upala (precious) stone (Partridge, 1966).

- oryza ultimately derived from Gr. oryza rice of non-Indo-European origin, akin to Skr. vrīṣis rice (Partridge, 1966).

- peridot also known as chrysolite, olivine, (Fe,Mg)2SiO$_4$, derived from Old Fr. peridot peridot, literally unclear or from Ar. faridat gem (Senning, 2007).

- piper(o) derived from the genus name Piper peppers, from L. piper pepper, ultimately from Skr. pipāḷī long pepper (Partridge, 1966).

- realgar As$_2$S$_3$, derived from Ar. rahj al-ghār powder of the mine (Senning, 2007).

- saccharum derived from L. saccharum sugar, ultimately from Skr. sārkara sugar (Partridge, 1966).

- safflorite CoAs$_3$, derived from Germ. Safflor dyer’s saffron, ultimately from Ar. zafaran saffron, and suffix -ite; referring to the use of this mineral in the manufacture of Germ. Safflor zaffer, cobalt blue. (Senning, 2007).

- safranal $C_{10}H_{14}O$, derived from Germ. Safran saffron, ultimately from Ar. zafaran saffron, and suffix -al (Senning, 2007).

- sandarac As$_4$S$_4$, derived from Gr. sandarākērealgar, probably akin to Skr. candana sandalwood (Partridge, 1966).

- santalol $C_{10}H_{12}O$, derived from the genus name Santalum sandalwood, from Medieval L. sandalum, santalum sandalwood, ultimately from Ar. sandal sandalwood, and suffix -ol (Senning, 2007), From Pers. chandal, from Skr. chandan.

- sapphire $A$_$_{2}$O$_{3}$, ultimately derived from Hebr. sappīr sapphire, lapis lazuli (Klein, 1983).

- sarafotoxin derived from Hebr. saraf a biblical poisonous snake, possibly Atractaspis engaddensis and toxin (Senning, 2007).

- sarpag derived from Hind. sarpagandha Indian snakeroot, Rauwolfia serpentine (Senning, 2007).

- sennoside $C_{18}H_{18}O_{20}$, derived from senna (Cassia), from Ar. sana senna, and suffix -ose, and suffix -ide.

- sesamin $C_{20}H_{30}O_6$, derived from sesame (Fagara), ultimately from Ar. sīmsim sesame, from Akk. shamashshamu and suffix -ine (Klein, 1983).

- soda Na$_2$CO$_3$·10H$_2$O, derived from Medieval L. soda barilla, ultimately maybe from Ar. suvvwad barilla (Senning, 2007).

- sophor(a) derived from the genus name Sophora (trees, shrubs), ultimately from Ar. sufatā Sophora.

- spinasterol $C_{29}H_{40}$O, derived from the genus name Spinacia (spinach), ultimately from Pers. isfānākh spinach, and sterol (Senning, 2007).

- steel ultimately derived from Skr. stakati steel resists; compare Av. staxra firm, strong (Partridge, 1966).

- sucrose $C_{12}H_{22}O_{11}$, derived from Fr. sucre sugar, ultimately from Skr. sarkara sugar, and suffix -ose.

- sugar ultimately derived from Skr. sarkara sugar (Partridge, 1966).

- talc also known as talcum, steatite, soapstone, Mg$_3$Si$_4$O$_{10}$(OH)$_$_$_2$, derived from Medieval L. tartar, Medieval Gr. tártaron tartar, and Ar. durdhiya lees, from Pers. durd lees (Partridge, 1966).

- trehalose $C_{12}H_{22}O_{11}$, derived from trehal (edible pulpy covering of the beetle Larinus maculatus), ultimately from Pers. tīghāl trehāl, and suffix -ose.

- trona Na$_2$(HCO$_3$)(CO$_3$)$_2$H$_2$O, derived from Ar. tron apharetic form of natrun, from Ar. natrun natron (Senning, 2007).

- turanose $C_{12}H_{24}O_{12}$, derived from Pers. Tūrān Turkestan, and suffix -ose; referring to this sugar’s occurrence in a manna found in Turkestan.

- uscharin $C_{31}H_{41}NO_{8}$, derived from uschari, a native African word for the arrow poison obtained from the African plant rubberbush, apple of Sodom (Calotropis procera), ultimately probably from Ar. usher rubberbush, apple of Sodom, Calotropis procera, and suffix -ine (Senning, 2007).

- usnic acid $C_{18}H_{18}O_3$, derived from the genus name Usnea mosses, from Ar. usnhnān moss.

- vasicene $C_{17}H_{24}N_{2}O_5$, derived from ushari, a native African word for the arrow poison obtained from the African plant rubberbush, apple of Sodom (Calotropis procera), ultimately probably from Ar. usher rubberbush, apple of Sodom, Calotropis procera, and suffix -ine (Senning, 2007).

- zero ultimately derived from Ar. sifr empty, zero (Partridge, 1966).

- zingiber derived from the genus name Zingiber ginger, from L. zingiber, gingiber ginger, ultimately from Skr. sīngi-vera antler-shaped (Partridge, 1966).

- zircon derived from Ital. giargone zircon ((Zr,Hf)SiO$_4$), from Ar. zargun gold color (Senning, 2007).
CONCLUSION

Reviewing the results of this study reveals that a great deal of important chemical and pharmaceutical terms are of oriental, especially Arabic, Persian and Hindi sources. Of these terms 63 references directly or indirectly made to Arabic language, Persian language 14 references, Hindi language 14 references, Sanskrit language 31 references, Hebrew language 10 references, and a single reference made to Syriac language. The authors believe that the exact amount of scientific terms of oriental origin are far many from the terms mentioned here as a small sample (Klepser and Klepser, 1999). The diversity of terms show that oriental sources have an important role in enrichment of human sciences.

REFERENCES