

## Elixir, Alchemy and the Metamorphoses of Two Synonyms

### Elixir, alquimia y las metamorfosis de dos sinónimos

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The history of the terms ‘elixir’ and ‘alchemy’ seems paradoxical; derived from Greek, the Arabic *al-iksīr* signified a dry powder capable of transforming base metals into gold or silver. Evolving through the European languages, elixir has come to mean a magic liquid that can be ingested to cure illness. The second term, *al-kīmiyā*, which was in its Arabic beginnings almost synonymous with elixir, took a different turn and changed its meaning from a miraculous substance into an abstract noun connoting the art of alchemy. This article intends to show that these changes of meaning are linked to inevitable interrelations between the two synonyms and, consequently, the generally assumed etymology of the Arabic *al-kīmiyā* from the seemingly corresponding Greek expression *χυμεία* must be questioned. Of particular interest is the hitherto overlooked fact that *al-kīmiyā* ends in a glottal stop, indicated by the *hamza* and being a consonant in its own right, which ultimately points to a non-Greek origin.

*Key words:* Zosimus, Jābir b. Ḥayyān, Constantine V Copronymus, al-Manṣūr (caliph), ‘Abd al-Laṭīf al-Baghdādī, Leo Africanus, social embedding, intellectual standard, Greek and Chinese etymologies, panacea, tea.

La historia de los términos «elixir» y «alquimia» parece paradójica; derivada del griego, la palabra árabe *al-iksīr* significaba «polvo seco capaz de transformar metales en oro o plata». Siguiendo la evolución de este término en cada una de las lenguas europeas, «elixir» ha llegado a significar «líquido mágico que puede ser ingerido para curar la enfermedad». El segundo término, *al-kīmiyā*, que, en sus inicios árabes, era casi sinónimo de elixir, tomó un giro diferente y cambió su significado de «sustancia milagrosa» pasando a ser un sustantivo abstracto que connota el arte de la alquimia. El presente artículo intenta mostrar que estos cambios de significado están vinculados a las inevitables interrelaciones entre los dos sinónimos y, en consecuencia, la etimología generalmente asumida del árabe *al-kīmiyā* correspondiente al término griego *χυμεία* debe ser cuestionada. De particular interés es el hecho, hasta ahora ignorado, de que la palabra *al-kīmiyā* termina en un sonido glótico, indicado por la hamza que, siendo una consonante en toda regla, podría apuntar a un origen no-griego del término.

*Palabras clave:* Zosimus, Yābir b. Ḥayyān, Constantino V Coprónimo, al-Manṣūr (Califa), ‘Abd al-Laṭīf al-Baghdādī, León el africano, estatus social, standard intelectual, etimologías griegas y chinas, panacea, té.

In order to trace the history of elixir and alchemy, two crucial terms of the ‘Sacred Art’, one must take into account their very peculiar social embedding (*Sitz im Leben*). Most revealing in this respect is a description given by a Muslim convert to Christianity, Leo Africanus, alias al-Ḥasan b. Muḥammad al-Wazzān al-Zayyāfī (d. c. 1550),<sup>1</sup> in his *Descriptione dell’Africa*, which relates the activities of the alchemists in his hometown of Fez.<sup>2</sup> There were, Leo reports, many men addicted to this vain occupation who contaminated themselves with the stench of sulphur and similar stuff. They assembled in the mosque in the evenings where they disputed over their opinions. They also had books, namely those of Jābir,<sup>3</sup> al-Ṭuḡhrā’<sup>4</sup> and al-Mughayribī<sup>5</sup> (who was also called Ibn Arfa‘ Ra’s), whose great opus – which can probably be identified as the *Shudhūr al-dhahab* (“The Splinters of Gold”) – they studied together with a commentary by a Damascene *mamlūk* which was even less comprehensible than the text itself. Leo comments that among the men who sought the elixir there were some who tried to multiply gold by mixing or colouring it with other substances and even outright criminals who tried to produce counterfeit money: an offence that was usually punishable by the amputation of hands.

What Leo describes must also have been typical of earlier centuries. The literature of the adepts was not an integral part of common intellectual life in Muslim society; rather it was associated with an isolated community suffering discrimination in a hostile environment. Some individual alchemists exceptionally won the favour of the rulers, if only for a short time. The books the alchemists read provided them with support and encouragement to continue their efforts despite their continual failures to achieve their alchemical goals. The alchemists’ intellectual standard was generally lower than those who earnestly studied Aristotelian philosophy, Galenic medicine or Ptolemaic astronomy, and who almost never refer to this kind of literature, confining themselves only to general statements about the likelihood or unlikelihood of transmutation. It is no wonder that adepts were so easily deceived by

<sup>1</sup> With respect to his reliability, cf. Davis, *Trickster Travels*, and Rauchenberger, “Note”, pp. 325-331.

<sup>2</sup> Leon Africanus, *Description*, vol. 2, pp. 163-165.

<sup>3</sup> See Ullmann, *Die Natur- und Geheimwissenschaften*, pp. 198-208.

<sup>4</sup> See Ullmann, *Die Natur- und Geheimwissenschaften*, pp. 229-231.

<sup>5</sup> See Ullmann, *Die Natur- und Geheimwissenschaften*, pp. 231-232.

pseudepigraphical writings in which wise men of old confirmed that the ‘Great Work’ had already been realised by the aid of the ‘philosophers’ stone’. The numerous alchemical titles which are preserved testify to the fact that these works must have found many readers.

Due to the peculiar character of this literature, with its figurative language and its coded terminology<sup>6</sup>, it is nearly impossible to trace there the most important alchemical terms and the development of their meaning. It proves therefore useful to consider first the reports of outsiders who describe the activities of the laboratories and the language used there by the adepts. As an outsider who acknowledges that he cannot understand the alchemical literature, Leo nevertheless knows the name of one basic concept of Arabic alchemy: that of the elixir (*al-iksīr*). It can be generally assumed that terms like ‘the philosophers’ stone’, the *kīmīyā*’ or the elixir came into common use through the everyday speech of the practitioners and their contemporaries. The elixir is also the central term in a biting invective by the philosopher ‘Abd al-Laṭīf al-Baghdādī (d. 629/1232), who accuses the alchemists of using parts of corpses and even human eyes to concoct their elixir,<sup>7</sup> although such ingredients are not usually mentioned in the more abstract discussions found in alchemical texts.

That the English word ‘elixir’ is derived via the Arabic *al-iksīr*, from the Greek word *xerion* (ξηρίον or ξήριον), was first ascertained by the scholar of Arabic Heinrich Leberecht Fleischer (1801-1888).<sup>8</sup> It was linked to the *idée fixe* that one must first produce a small amount of this special substance which should then be thrown on the base metal transforming it instantly into gold or silver. The roots of this doctrine can be partially traced to Hellenised Egypt, e.g., in Zosimus of Panopolis, where elixir is only one of many synonyms.<sup>9</sup> According to the Greek etymology of ξηρίον, it could signify any dry powder, as e.g. in medicine, where various powders were used to desiccate wounds or treat eye diseases, and these are often mentioned together with the inventors of the recipes.<sup>10</sup>

<sup>6</sup> Lory, “Mots d’alchimie”, pp. 91-106.

<sup>7</sup> ‘Abd al-Laṭīf al-Baghdādī, *Ris. fī Muḡādalat al-ḥakīmāin*, pp. 314-315 (I thank Regula Forster for having procured me a copy of this dissertation); cf. Joosse, “Unmasking the craft”, pp. 301-317.

<sup>8</sup> Strohmaier, “Elixier”, pp. 63-73.

<sup>9</sup> Berthelot, *Collection*, vol. 2, pp. 114, l. 11; 127, l. 8 and 205, ll. 1-9.

<sup>10</sup> Aetius Amidenus, *Libri medicinales* VI 65, pp. 212, l. 19-213, l. 3; Alexander of Tralleis, *Opera* I 15, vol. 2, pp. 44-49.

In Hellenistic times, the alchemical transmutation with the help of the xerion was seen as a slow process, like yeast in dough or sperm in the womb: a process which could be reduced to fourteen days at the most.<sup>11</sup> With the transition to Arabo-Islamic alchemy, the concept of the elixir took a decisive turn with regard to the speed of the process. This is documented in the eyewitness report of another outsider quoted in the abridgement of a longer geographical work by Ibn al-Faqīh al-Hamadhānī (3<sup>rd</sup>/9<sup>th</sup> century).<sup>12</sup> An Arab ambassador named ‘Umāra b. Ḥamza is sent by Caliph al-Manṣūr (r. 136-158/754-775) to the Byzantine emperor Constantine V, called Copronymus (r. 741-775).<sup>13</sup> Towards the end of the visit, the emperor invites ‘Umāra to accompany him to a special building outside the palace with guards standing before it. Inside are rooms with sealed doors, and the emperor orders one of them to be opened. They enter, and ‘Umāra sees that white bags are piled around the walls of the room. The emperor asks him to select one at random, which is then opened to reveal a white powder. A small sample is taken, the bag is resealed, and they proceed to the next room where red bags are piled around. The procedure is repeated, and a sample of red powder is extracted. They then proceed to a laboratory, to where a melting-furnace,<sup>14</sup> bellows and ingots of copper and lead are brought. A very small amount of the white powder, not more than the covering of a thumbnail, is thrown onto the melted lead, and white silver emerges from the furnace. The process is repeated with the copper, which results in red gold when combined with a small amount of the red powder. The emperor concludes by addressing the ambassador with the ominous remark that this procedure thus provides him with the capital with which to pay for soldiers and horses.

‘Umāra’s report may well be close to the truth, for he presents himself as the victim of a fraud and therefore cannot have had the intention to exaggerate. The red colour of the gold betrays that the ingot was not real copper but genuine gold covered with a thin layer of copper, and the ingot of lead was likewise real silver coated with lead. In the

<sup>11</sup> Berthelot, *Collection*, vol. 2, p. 203, ll. 18-22; Lippmann, *Entstehung*, vol. 1, p. 80, cf. p. 345.

<sup>12</sup> Ibn al-Faqīh, *Mukhtaṣar*, pp. 138, l. 22-139, l. 12; Ibn al-Faqīh, *Abrégé*, p. 166.

<sup>13</sup> Rochow, *Kaiser Konstantin V.*, pp. 82-87 and 176; see also Strohmaier, “Al-Manṣūr”, pp. 167-177; Strohmaier, “‘Umāra”, pp. 21-24.

<sup>14</sup> For the word *kīrun*, see Ullmann, *Wörterbuch*, vol. 1, pp. 487-489.

process of melting, the coating disappeared, and the powder was to be believed as the transmuting agent. We see here what was to become the unfulfilled dream of generations of alchemists to come: they believed that it was possible with the help of a tiny amount of a white powder to transform a great mass of lead into silver, and with the aid of a red powder to change a great mass of copper into gold. The distinction between the two elixirs became a constituent feature of Arabic alchemy,<sup>15</sup> whereas it seems not to have been so clearly indicated in Greek alchemy.<sup>16</sup> A novel aspect is the expectation that the transforming agent should work instantaneously in simply being scattered over the baser metal.<sup>17</sup>

That the transmutation performed at the Byzantine court worked instantaneously may be explained in two ways: either the new doctrine of the speediness of the process had spread throughout the Mediterranean within the circles of Greek and Syrian adepts<sup>18</sup> and the emperor was hoping to fulfil the expectations of the foreign visitor, or the instantaneous result was simply due to the necessity of impressing the foreign visitor – the demonstration would not have been as impressive had the process taken days or even weeks. And the success of the demonstration is quite evident as ‘Umāra’s report concludes with the explanation that al-Manṣūr himself began experimenting with alchemy.

It may safely be assumed that al-Manṣūr tried to imitate what his ambassador had seen, and it might be equally understandable that his research programme did not remain secret and thus influenced the activities of his ordinary subjects. It is worth noting that, according to a saying of the vizier Yaḥyā b. Khālīd al-Barmakī (d. 190/805)<sup>19</sup> quoted by the same Ibn al-Faqīh, the Byzantine emperor was called “the Lord of the Elixir” (*malik al-iksīr*); it would appear that rumours about the new Byzantine achievements were spreading.<sup>20</sup>

But how did it come about that the dry powder referred to as ‘elixir’ came into its modern signification to mean a liquid and also a panacea?

<sup>15</sup> Rex, *Zur Theorie*, p. 115.

<sup>16</sup> Lippmann, *Entstehung*, vol. 1, pp. 79-80.

<sup>17</sup> Cf. Pseudo-Majrīṭī, *Ghāyat al-ḥakīm*, p. 8, ll. 4-7; Pseudo-Majrīṭī, “*Picatrix*”, p. 8, ll. 21-27; see also Ullmann, *Die Natur- und Geheimwissenschaften*, p. 259.

<sup>18</sup> Regarding the ongoing alchemical activities among the Syrians cf. Martelli, “*Medicina ed alchimia*”, pp. 207-228.

<sup>19</sup> Sourdel, “*al-Barāmika*”, pp. 1033-1036.

<sup>20</sup> Ibn al-Faqīh, *Mukhtaṣar*, p. 136, l. 14.

First it should be noted that the word lost its connection with dryness. This can be deduced from etymological speculations found in Arabic literature.<sup>21</sup> The ξηρίον/*iksīr* in Arabic no longer meant a powder but was understood as a foreign word signifying only the crucial transforming agent which could be in any physical state.

An equally wondrous effect of the elixir, this time in a medical context, appears first in the Corpus Jābirianum, where the author of the *Kitāb al-Khawāṣṣ al-kabīr* claims that he healed in one day more than one thousand patients, among them a slave girl of the vizier Yaḥyā b. Khālid, whom he cured in under half an hour.<sup>22</sup> This panaceatic quality was missing in Greek alchemy or played only a minor role. Lippmann names some authors but gives no specific examples for the use of the elixir as a kind of panacea.<sup>23</sup> An explanation for this extended use of the elixir is proposed by Paola Carusi, who observes that a ξηρίον of Greek medicine was taken up by Syrian and Muslim medical authors who use it as a special term in relation to ophthalmology.<sup>24</sup> But it seems to me highly unlikely that this ξηρίον of the physicians, which remained a dry powder and became only a component of eye salves, should have provided the adepts with the stimulus to enhance their *iksīr* in such a fantastical way as evidenced in the Jābir corpus.

The medical connotation can more easily be explained by an effect of the synonym *al-kīmiyā*. At the end of al-Ya‘qūbī’s report we read: *qāla ‘Umāra: fa-ḥaddathu l-Manṣūra bi-hādhā l-ḥadīthi fa-kāna hādhā l-ladhī ḥadāhu ‘alā ṭalabi l-kīmiyā’*.<sup>25</sup> The sentence can be translated either as “‘Umāra said: I reported this to al-Manṣūr, and it was this which induced him to search for the *kīmiyā*”, or as “‘Umāra said: I reported this to al-Manṣūr, and it was this which induced him to search for the alchemy”. The usual expression for the art was *ṣinā ‘at al-kīmiyā*, which can be shortened to simply *al-kīmiyā*, but this meant also – and from the very beginnings of Arabic alchemy and due to an interchange of the meanings – the same miraculous substance as the *iksīr*.<sup>26</sup>

<sup>21</sup> Ullmann, *Die Natur- und Geheimwissenschaften*, p. 258, note 9.

<sup>22</sup> Jābir b. Ḥayyān, *Essai*, pp. 303-306; cf. Kraus, *Jābir*, pp. 148-152 (no. 1900-1970).

<sup>23</sup> Lippmann, *Entstehung*, vol. 1, p. 346.

<sup>24</sup> Carusi, “Elixir”, p. 110; cf. Prüfer and Meyerhof, “Die Augenheilkunde”, p. 252; Pseudo-Ḥunayn b. Iṣḥāq, *The book*, p. 205, l. 9; transl. p. 138 (I thank Paola Carusi for this reference); Avicenna, *al-Qānūn*, 5, 2, 3, vol. 3, p. 419, l. 13.

<sup>25</sup> Ibn al-Faqīh, *Mukhtaṣar*, p. 139, l. 11-12.

<sup>26</sup> Ullmann, *Wörterbuch*, vol. 1, pp. 512-516.

The etymology of the term *kīmiyā*’ remains a mystery to the present day.<sup>27</sup> The most widely accepted explanation is that it derives from the similarly sounding Greek χυμεία, sometimes also written as χημεία, which originally meant the casting of alloys and also became a name for the secret art. But this only indicates an occupation and not a substance. The difficulty is clearly expressed by Julius Ruska, who stated in an article published in 1942:

Ebenso wenig ist es bis jetzt möglich, den Bedeutungswandel von *kīmiyā*’ [sic], der sich innerhalb der arabischen Alchemie von der Bezeichnung der Kunst zu der einer Substanz vollzieht, durch welche die Umwandlung bewirkt wird, im einzelnen zu verfolgen.<sup>28</sup>

But the original meaning of *kīmiyā*’ in Arabic seems not to have been the name of an occupation but of a substance, a synonym for the elixir. A hitherto overlooked argument lies in the *hamza*, the last consonant of the word *kīmiyā*’, which we find preserved throughout Arabic literature. It is improbable that in the course of translation one translator or copyist inadvertently added the *hamza*, whereupon the mistake spread throughout the whole literature. The general trend in the development of the Arabic language was, on the contrary, the substitution of the glottal stop at the end of a syllable by the extension of the preceding vowel.<sup>29</sup> One may compare the word καδμεία (a zinc oxide used in medicine), which became in Arabic *qadmiyā* or *iqḷīmiyā*, without the addition of a *hamza*.<sup>30</sup> One should also not overestimate the role of translations from the Greek; it is improbable that they should have been the main incentive for the Muslims who studied them to begin making alchemical experiments themselves. Rather, there existed among the circles of adepts in Syria an uninterrupted tradition of alchemical theory and practice from Hellenistic times until the time of Islam.

Nevertheless, contact with a living language, either Greek or Syriac, does not explain the existence of the *hamza*; for we have no glottal stop at the end of a syllable in either language. The word with the final *hamza* must have originated from personal contact with speakers of a non-Indo-European language. In considering the question, Joseph

<sup>27</sup> Cf. Lippmann, *Entstehung*, vol. 1, pp. 293-314 (“Herkunft des Namens Chemie”).

<sup>28</sup> Ruska, “Neue Beiträge”, p. 335.

<sup>29</sup> Fischer, *Grammatik*, pp. 10-11.

<sup>30</sup> Käs, *Die Mineralien*, vol. 1, pp. 258-276.

Needham, the great expert on Chinese science and culture, proposed an etymology derived from a Chinese word meaning “gold juice”, which ended in a consonant that had a similar sound to the *hamz* in Arabic. Just like the elixir, the “gold juice” was thought to transmute base metals into gold and additionally to confer long life or even immortality.<sup>31</sup> This theory seems far-fetched as Chinese science had only rarely an impact on Muslim culture in the Middle Ages; moreover, we are not so much concerned here with philosophy and science as with a mercantile product and the rumours that surrounded it. And trade was flourishing, both on the Silk Road and on the southern shipping route.<sup>32</sup>

An interesting parallel example is offered by another commodity which the Chinese exported to Muslim countries. Al-Bīrūnī (362-440/973-1048), in his great lexicon of *materia medica*, tells a story about the discovery of tea. One of the Chinese emperor’s courtiers had fallen into disgrace and was sent into exile to the mountains where he discovered the beneficial effects of the tea plant and thereby regained the favour of the monarch. However al-Bīrūnī is rather vague about the manner in which the Chinese prepared and drank the substance.<sup>33</sup> This suggests that tea itself had still not reached al-Bīrūnī but rumours about it had. He knows the Chinese name, which he gives as *čā*.<sup>34</sup> In the parallel case of the *kīmiyā*’, the rumours seem to have had a lasting effect as the name found inclusion in the rich arsenal of synonyms for the elixir.<sup>35</sup> On the other hand, its connotation as a panaceatic gold juice could not fail to influence the other expressions, among them, of course, the elixir, which in this sense reached the Latin West.

Here it is interesting to trace the changes both synonyms underwent in the new linguistic environment; the *kīmiyā*’ inevitably lost the final *hamza* and became, written as *alchimia*, an abstract noun denoting an

<sup>31</sup> See especially Needham, *Science and Civilisation*, vol. 5, 2, pp. 114-127 and 282-304; vol. 5, 4, pp. 472-491; cf. also the lengthy and not quite conclusive deliberations by Mahdihassan, “Alchemy”, pp. 99-151 (for some references I thank Lijuan Lin).

<sup>32</sup> Cf. also considerations by Hill, “The literature”, pp. 332-333, and Needham, *Science and Civilization*, vol. 5, 4, p. 355.

<sup>33</sup> Al-Bīrūnī, *Book on pharmacy*, pp. 128, l. 2-129, l. 17 (trans. pp. 105-106); German translation in al-Bīrūnī, *In den Gärten*, no. 85.

<sup>34</sup> According to the reliable annotated Russian translation by Karimov, *Abu Rajchan Beruni*, no 237.

<sup>35</sup> See the examples in Ullmann, *Die Natur- und Geheimwissenschaften*, pp. 258-259.



intellectual occupation, quite on a par with *philosophia*, *theologia*, *geometria*, *astronomia*, etc. The term's original meaning as a substance was not immediately lost,<sup>36</sup> but it receded and with it the connotation of a life-giving agent. However, the panaceatic aspect retained its association with the elixir, previously a synonym of *kīmiyā*.<sup>37</sup> In the *Liber misericordiae*, an adaptation of the *Kitāb al-Rahma* of the Jābir corpus,<sup>38</sup> the *elixir* is effective against acute fever, cholera, *melancolia*, *flegma* and "blood" (*sanguis*), whatever this may be.<sup>39</sup> Yet the elixir's original function is not altogether forgotten as it also acts on base metals, into which it penetrates like a poison.<sup>40</sup> And even in the new Latin context, the alchemist is advised to take, as at the Byzantine court, a red elixir for gold and a white one for silver, and from both a little quantity only.<sup>41</sup>

The final phase of all these metamorphoses can be detected in our everyday speech; alchemy is nowadays an abstract noun denoting only the work of the adepts, while the connotation of a miraculous substance has remained with the elixir, which in turn has lost its original Greek connection with dryness adopting instead a liquid state and the quality of promoting health, and this probably under the earlier influence of the synonymous *kīmiyā* with its assumed Chinese etymology as "gold juice".

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<sup>36</sup> See testimonies in Prinz, *Mittelateinisches Wörterbuch*, s. v. *alchimia*.

<sup>37</sup> Priesner and Figala, *Alchemie*, s. v. *Panacea*.

<sup>38</sup> Kraus, *Jābir*, no 5, pp. 5-9.

<sup>39</sup> Darmstaedter, "Liber Misericordiae", p. 188, ll. 234-238.

<sup>40</sup> Darmstaedter, "Liber Misericordiae", p. 189, ll. 303-307.

<sup>41</sup> Darmstaedter, "Liber Misericordiae", p. 193, ll. 461-478.

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