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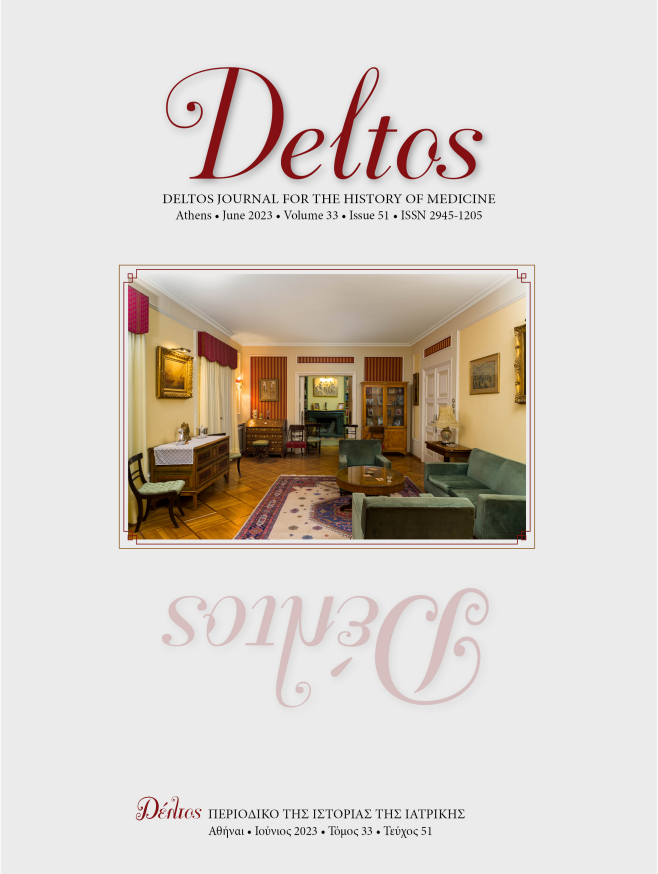

The medical use of Málaka wine and cola nuts in late 19th/early 20th century Greece

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Figure 1. Above: Branch of the African tree Cola acuminata. **Bellow:** The tree's nuts. Krinos thought to add the powder of the cola seeds, encapsulated in the tree's nut in his elixir "Krinos Cola Wine"

Abstract

The lands of Malaka in Spain have been renowned for their wine since the 8th century BC. Malaka wine gained popularity among merchants and consumers since the 17th century, becoming one of Europe's favourites. The seeds (nuts) of the African Cola acuminata trees had been used in daily life as an invigorating and stimulating chewing or eating delicacy. In the late 19th century, Stamatios Krinos, who had opened one of the first (or the first) pharmacies in Athens in 1836, and his son Athanasios, produced an Elixir named Krinos Cola Wine to treat neurasthenia, chlorosis, anaemia, indigestion, gastralgia, chronic diarrhoea, cardiopathies, weakness and infertility. The properties of both the wine and the nuts, along with the chemical compounds of cola, were already known by the mid-19th century and the Krinos family took advantage of this knowledge to introduce a novel herbal drug (cola seeds) to the Hellenic pharmacopeia. The properties attributed to the Krinos elixir are de novo and in depth validated today by a series of modern medical studies. The fact that cola was not included as a therapeutic agent in the Hellenic textbooks of pharmacology of that era suggests that Krinos made an innovative addition to the timelessly popular Hellenic herbal medicine and pharmacopeia.

Key words: *Cola acuminata, Hellenic pharmacopeia, Athens pharmacies*

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Introduction to Malaka's social and agricultural trends

The growing prominence of Malaka among the nearby Phoenician-Punic settlements of the area long before the establishment of the homonymous city started with its colonisation by the Phoenicians around the mid-7th century BC. Archaeological findings, with an abundance of locally produced pottery and some imported ceramics, indicate that the settlements thrived during the 5th century BC. Additionally, there are numerous Ionian-Masillian-style amphorae, likely inspired by the western Greek colonial exports and Hellenic Ionian-style imports, suggesting Malaka's prominent role in connecting the wider Mediterranean and the Greek world, in particular during the 6th century BC[1].

Grapevine cultivation began in the 8th century BC, benefiting from the region's high-quality clays and its status as a thriving commercial centre. This facilitated exchanges with North Africa, the Hellenic world, and the Gualdolhorce river area. Over time, clay manufacturers congregated and settlements shifted from various areas like Cero del Villar (a small island) to el Cerro, forming the city of Malaka. The zenith of Punic Malaka came some centuries later; during the 3rd century BC the Roman Malaga continued its Phoenician-Punic past[2]. It is believed that the Greek colony of Mainake was situated somewhere in the vicinity of Malaka. Both the Phoenicians and the Greeks, who were traders and wine enthusiasts, attributed the region's wine productivity to the inhabitants of Malaka, known as Malaga today[3].Wine remained a commodity in the Mediterranean region until Christopher Columbus travelled the world and the conquistador leader Herman Cortes (1485-1547) took vine cuttings and seeds to America, thereby globalising the wine industry. Malaka wine dominated the wine industry until the beginning of the 20th century and the Spanish Civil War[4].

Spanish wines, distinct from those of Germany and France, stood out due to the country's abundant sunshine and warm climate, resulting in a higher alcohol content. However, only Xeres and Malaka (Malaga) were considered excellent, while other varieties were neglected. The calcareous soil in the mountains surrounding Malaga city, with pockets of schist, yielded exquisite wines that enjoyed significant exports[5]. Greece, deeply rooted in wine culture, was no exception. Wine stood as one of its major export commodities[6], but, while Greeks were, and still are, known for their alcohol consumption, their long history of wine production was severely disrupted during the Ottoman Empire occupation, so they searched for more wine elsewhere[4].

In the early 20th century, Malaka wine was utilised by pharmacist Stamatios Krinos or his son Athanasios to create an elixir[7]. This elixir contained powder of cola nuts, a lucrative African fruit that had been chewed as a stimulant by Africans and Europeans since the 17th century, gaining immense popularity during the 19th century[8]. During this era, physicians, druggists and chemists had been producing fluid remedies as tonics, elixirs and vinimedici by using distilled or fermented spiritas a primary substance[9].

This vignette, exploring the history of medicine, employed a documentary research method to unveil how Malaka wine and cola nuts were introduced into the Hellenic pharmacopeia, and to examine the potential therapeutic properties of Krinos' elixir.

Stamatios Krinos and Krinos family elixir

Born in the district of Tataula in Constantinople, Stamatios Krinos (1815-1886) [Figure 2], showed a love towards pharmacology since his youth. Although

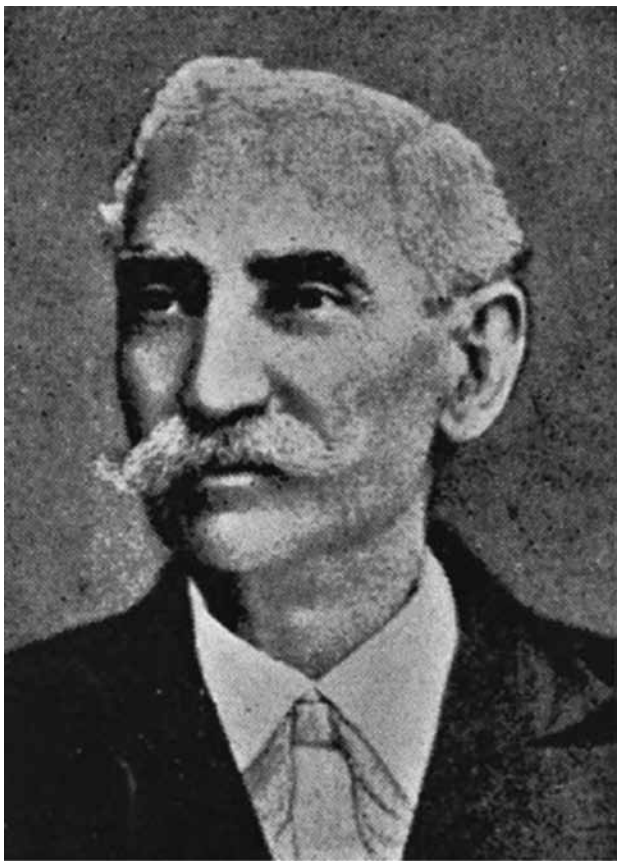

Figure 2. Portrait of Stamatios Krinos, published in the 1837-1937 Centenary of the National and Kapodistrian University of Athens in 1937.

his father Dimitrios was a wealthy fur merchant, Stamatios moved to the island of Syros to work as a pharmacotriftis (empirical low cast of pharmacists) in the Apothecary of his elder brother Athanasios Krinos. In 1835, he moved to Athens to study at a School established to teach the empirical pharmacists. At the School, the German Xaver Landerer (1809-1885), medical pharmacist of King Otto and Nicolaos Kostis (1805-1861) from Smyrna tried to reform pharmacology in modern Greece.

To further expand his knowledge in chemistry and botany, Stamatios travelled to study in Pizza,Italy and Paris, France. In Paris, became an associate drug producer under Dr Dumas. Upon his return to Greece, he started to teach at the School of Arts, giving lectures on chemistry. In 1850, he was appointed as a lecturer (non-tenured position name ifigitis) of organic chemistry and, in 1861, became a professor of Pharmacographia and Pharmacology at the Medical School of the Othonian University of Athens. From 1853 until his death, Stamatios was a member of the Iatrosynedrio (Medical Council giving instructions on public health issues). From 1856 to 1859, he was the publisher of the medical Journal Asclepios in Athens. He wrote a treatise on "Styrax" in 1881 and another one, titled "Determining the ancient Hellenic plants under the folklore nomenclature in various times and places and the benefit of etymology and lexicography for the Greek language" (in Greek). He also published an article in the Parnassos Journal "On the scientific identification of the plants first studied by the Greeks". He started another work on folklore botany,but it was cut short by his demise[10-12]. His work testified to the fact that during the Neohellenic Enlightenment, Greeks did not accept European knowledge as it was published in Western Europe, but tried to write their own historical narrative, rooted in Hellenic reality and heritage[13].

In 1836, Stamatios Krinos founded one of the first pharmacies in Athens, the new capital of the Hellenic Kingdom. Located at 171-173, Aiolou street [Figure 3], it quickly became a hub for physicians, serving as a venue for scientific discussions and political debates. Apart from drug preparation, Krinos's pharmacy also conducted various microbiological tests. As time passed, Krinos expanded his operations, establishing a warehouse and a small drug factory at 5-7, Geraniou street [Figure 4].

During the cholera epidemic of 1854, he played a vital role as the "police chemist" overseeing the markets of Athens and Piraeus. He generously donated high-value drugs in response to a royal decree. Krinos's significant contributions to the reform of Hellenic pharmacology and Athenian society earned him the prestigious Order of the Saviour[14-17].

To expand his drug industry, Stamatios, a master

Figure 3. The Krinos Pharmacy on Aiolou street, Stamatis Krinou Archive (ELIA-MIET).

Figure 4. The Krinos Drug small Industry, Stamatis Krinou Archive (ELIA-MIET).

botanist, developed and patented several new drugs in the Hellenic state. On January 18th, 1894, he patented an elixir called Krinos Cola Wine (Greek: Οίνος Κόλα Κρίνου) [Figure 5][17].

Recognising the Greeks' preference for a pleasant taste, the Krinos family used Malaka Spanish wine and enhanced it with cola fruit powder derived from Cola acuminate or Cola nitida (related species). This elixir, as advertised, claimed to address ailments such as neurasthenia, chlorosis, anaemia, indigestion, gastralgia, chronic diarrhea, cardiopathies, weakness, and infertility. The patent date of 1894 suggests that the Krinos elixir may have been an innovation by Athanasios. However, it was Stamatios who possessed the knowledge, motivation, and experience to compose it. Notably, the advertisement bears the name Stamatios D Krinos Pharmacy, indicating that the wine was likely created during Stamatios' lifetime. Regardless of the innovator, the Krinos elixir enjoyed success and remained in circulation until the early 20th century under the management of Stamatios' son, Athanasios (1855?-1900). Even after Athanasios' passing, Krinos wine continued to thrive for a few more years[6]. Operating under Athanasios Krinos [Figure 5], the small Krinos industry was the supplier of the Medical School of Athens, as documented in the university's 1895 economic report[18].

Figure 6. Portrait of Athanasios Krinos, published in the 1901 Konstantinou Skokou National Calendar by the printing press of Anesti Konstantinidi in Athens

Figure 5. Krinos Cola Wine advertisement, an "s" is added to Malaka wine.

Discussion

Elixir, a Latinised Arab term from the word al-iksir, relates to the Hellenic word xerion (Greek: ξήριον), denoting a dry medical powder mixed in a potion added to an imperfect thing to ameliorate it. Elixir, as a liquid remedy, was believed to have restorative and curative powers. It was firstly used as a term by alchemists to describe a substance able to transmute base metal into gold, cure disease and promise immortality[19].

The idea spread from 12th century Islam to Europe, igniting a widespread desire for a substance capable of rejuvenating and enhancing one's youth, strength, and health beyond their natural state. Roger Bacon (1214-1292) pioneered the connection between longevity and the concept of an elixir, leading to the development of «macrobiotics» (from the Greek word μακροβιοτικά, meaning longevity) or «pharmaka athanasias» (from the Greek words φάρμακα αθανασίας, meaning drugs of immortality). Philippus Aureolus Theophrastus Bombastus von Hohenheim (Paracelsus, 1493-1541) emphasised that alchemy aimed to create "drugs", rather than "to make gold". Eminent chemists Robert Boyle (1627-1691) and Antoine-Laurent Lavoisier (1743-1794) both crafted and utilised elixirs. Consequently, elixirs became a lucrative endeavour for both genuine healthcare professionals and charlatans seeking to bolster their income. During this era, elixirs transitioned into medical commodities, despite often lacking genuine efficacy. However, on the cusp of the 19th century, the landscape changed as authentic therapeutic agents were employed in elixir production, yielding varying degrees of effectiveness. The reputation of esteemed physicians and the populace's fervent embrace of autosuggestion for a healthier or more aesthetically pleasing future firmly established elixirs as a regular fixture in medical practice[20].

The growing medical concern over the harmful effects of alcohol combined with botanic or other organic substances, accompanied by the vice of chronic alcohol abuse, prompted health care professionals to compose sweetened abuse, prompted hydro-alcoholic liquids for oral use[21]. Moreover, the social climate of the era was favourable for such elixirs. Since the mid-19th century, a series of novels such as 1830 "L' Élixir de longue vie" (English: The Elixir of Life) by Honoré de Balzac (1799-1850) and 1833 Mary Shelley's (1797-1851) "The Mortal Immortal", which discussed the subject of the elixirs of life, promoted a positive approach among readers[22-23]. This paved the way for charlatans, chemists, physicians and pharmacists who began concocting their own"miraculous" potions. Stamatios Krinos was not the only pharmacist in Athens to produce an elixir. Nicolaos Vaktalopoulos (1871-?) operated the «Galen» apothecary at the intersection of Hippokratous and Solonos streets, where he produced the «Vaktalopoulos elixir», later renamed «Vaktalin» (1909). This elixir aimed to invigorate the body and functioned as an antipyretic remedy[17, 24-25]. In the case examined, Krinos introduced his own elixir into the Hellenic pharmacopeia, utilising cola nut powder and red wine as the liquid solvent.

As demonstrated in the advertisement, Krinos added an "s" toMalaka wine (Greek grammar: possessive case), naming it Malakas (Greek: Μάλακας)[7]. Red wine was proposed for treating different types ofanaemia[26] including neonatal anaemia[27] and as a nutritional of anaemia supplement containing iron, for soldiers[28]. Red wine was also recommended for managing chlorosis[29]. Krinos thought to add the powder of the cola seeds,encapsulated in the tree's nuts [Figure 1].

The Cola acuminata tree, standing 20 to 30 feet tall with smooth cylindrical branches, produces bitter-tasting nuts that enhance the taste of whatever is eaten after them. Although bitter, when added to mixtures with water, they render the water sweet and palatable, and they boost taste when combined with milk and honey. In Africa, cola nuts held significance as a commodity, symbolising social and religious status. They were highly valued in commerce and even used as currency. African people recognised the medicinal properties of cola nuts, which could suppress hunger pangs and provide endurance during strenuous labour. They were consumed to alleviate sea-sickness, migraine, nervous complaints, stomach issues, dyspepsia and related problems. As a stimulant and tonic**,** cola nuts invigorated the human body. They were considered Africa's most valuable therapeutic plant, closely related to coffee, cocoa and tea.

Analysis showed that they contain caffeine, tannin and theobromine, and, according to some reports, theine[30]. French botanist and physician Édouard Marie Heckel (1843-1916) proposed that cola nuts be used in medicine like coca in neurology and as a nutritive beverage when needed[31].While cola trees flourished primarily in West Africa, their commercial and medicinal value prompted their cultivation in other regions. As a result, the trade of cola nuts expanded to Central Africa and even reached the African shores of the Mediterranean, catering to new markets[32]. The late 19th century witnessed the prevalence of elixirs and distilled liquors in the lives of many Europeans. These served dual purposes as both miraculous drinks and liquid medicines due to their intoxicating and mind-

altering properties. Esteemed physicians of the time each proposed their own elixir to improve health or enhance beauty[33].

Although Krinos Cola Wine offered a variety of uses for its clients, Hellenic pharmacology textbooks did not encompass cola nuts. In his renowned 1875 work "Pharmacologia, On the Nature, Power and Use of Drugs", Theodoros Afentoulis (1824-1893), an eminent writer with profound knowledge of plants and medicines, omitted the mention of cola nuts. It is plausible that Krinos introduced an entirely new seed to the Hellenic realm. Alternatively, Afentoulis might have acknowledged caffeine and coca without deeming it necessary to reference cola nuts. The former possibility appears more likely since textbooks from that era classified cola as a relative of caffeine, possessing similar properties to coca[34].

The hypothesis gains support, as both medico-philosopher and monk Dionysios Pyrros Thettalos (1774/1777-1835) in his 1918 short "General Pharmacopeia" and Georgios Photeinos in his treatise "Hellenic Pharmacopeia" published in 1835, did not mentioned cola nuts or mixtures as therapeutic remedies[35,36]. Some decades later, Anastasios Damvergis (1857-1920) an expert in pharmacology and chemistry, reported in his 1909 "Pharmacopoeia" both Elixir Cola and wine Vinum Colae as therapeutic agents[37]. Meanwhile, the great botanist Spyridon Miliarakis (1852-1919) in his "Textbook of Botany" noted that the African tree Cola acuminata is categorised as similar to cacao (Theobroma Cacao) in the Sterculiaceae family and highlighted earlier reports of Cola nuts' medicinal uses[38]. Krinos wine emerged strong among the therapeutic agents of the early 20th century, but was subsequently neglected amidst the emergence of newer medical trends and the disruptions caused by European wars during that time.

Cola nuts are currently being tested or utilised for their chemical components, which possess psychostimulating, anti-mycobacterial, antioxidant, and appetite-suppressant properties[39-42]. They also exhibit antidiarrheal effects and have been employed to address weak erection and low sperm count issues[42]. Tannin invigorates the body and reduces the risk of cancer and neurodegenerative diseases, such as cardiovascular diseases and Alzheimer's[43-44]. Theobromine has demonstrated promising anti-cancer activity by inhibiting lung cancer angiogenesis[45], and it could potentially be utilised in meal replacement products[46]. Moreover, theobromine helps lower blood pressure, improve blood flow[47-48], and enhance cognition and mood[49]. Caffeine, on the other hand, may interfere with deep sleep and overstimulate the body[50], but it also offers protection against Parkinson's disease[51] and lowers the risk of developing it[52].

In the late 19th century, there was a widespread belief in the positive effects of chewing cola nuts. Medicinal plants have been used for centuries to treat ailments and their phytochemical contents have been extensively studied[42]. The Krinos family introduced a blend of cola seeds and Malaka wine to the Hellenic pharmacology arsenal during an era when it relied heavily on botany for treatments of diverse ailments[7]. Herbal medicine constituted a vital component of the pharmacopeia in the early 20th century. Presently, herbal remedies are gradually being revisited to overcome impasses in modern pharmacy[42].

Epilogue

With a rich history, Malaka wine gained fame in Europe as one of its finest. The therapeutic properties of African Cola seeds were well-known. The Krinos family, known for their strong pharmacy tradition, ingeniously combined these two elements to create an elixir that enjoyed popularity for several decades in Greece. Known as Krinos Cola Wine, this invigorating and stimulating drink harnessed the effects of its chemical compounds to successfully enter the Greek pharmaceutical products market.

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ΠΕΡΙΛΗΨΗ

Η ιατρική χρήση του κρασιού Málaka και των ξηρών καρπών κόλα στα τέλη του 19ου- αρχές του 20ου αιώνα στην Ελλάδα

Γρηγόριος Τσουκαλάς, Λάζαρος Βλαδίμηρος

Τα εδάφη της περιοχής Μάλακα στην Ισπανία είναι γνωστά για το κρασί τους από τον 8ο αιώνα π.Χ. Το κρασί Malaka έγινε δημοφιλές ανάμεσα στους εμπόρους και τους καταναλωτές από τον 17ο αιώνα και μετά, όντας ένα από τα αγαπημένα της Ευρώπης. Οι καρποί (δρύπες) των αφρικανικών φυτών Cola acuminata είχαν χρησιμοποιηθεί στην καθημερινή ζωή ως αναζωογονητική και διεγερτική λιχουδιά για μάσημα ή φαγητό. Στα τέλη του 19ου αιώνα, ο Σταμάτιος Κρίνος που είχε ανοίξει το πρώτο (ή ένα από τα πρώτα) φαρμακείο στην Αθήνα το 1836 και ο γιος του Αθανάσιος, παρήγαγαν ένα Ελιξίριο με το όνομα Οίνος Κόλα Κρίνου για τη θεραπεία νευρασθένειας, χλωρίωσης, αναιμίας, δυσπεψίας, γαστραλγίας, χρόνιας διάρροιας, καρδιοπάθειας και αδυναμίας. Οι ιδιότητες τόσο του κρασιού όσο και των ξηρών καρπών Κόλα, και οι χημικές ενώσεις τους, ήταν γνωστές από τα μέσα του 19ου αιώνα και η οικογένεια Κρίνου τις εκμεταλλεύτηκε για να εισαγάγει στην Ελληνική φαρμακολογία ένα νέο φυτικό φάρμακο (δρύπες κόλα). Οι ιδιότητες που είχαν αποδοθεί στο ελιξίριο του Κρίνου (θεραπευτικός οίνος) επικυρώνονται de novo και σε βάθος σήμερα, μέσα από μια σειρά μελετών στη σύγχρονη ιατρική. Το γεγονός ότι τα εγχειρίδια φαρμακολογίας στην Ελλάδα εκείνη την εποχή δεν περιλάμβαναν την κόλα ως θεραπευτικό παράγοντα, πιθανότατα σημαίνει ότι ο Κρίνος με τον οίνο του, έκανε μια καινοτόμο προσθήκη στη διαχρονικά δημοφιλή Ελληνική βοτανοθεραπευτική-φαρμακοποιία.

Λέξεις Κλειδιά: *Cola acuminata, Ελληνική φαρμακοποιία, Αθηναϊκά Φαρμακεία*

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