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ORIGINAL ARTICLE

Once again on the Empress Zoe: Women, dermatology, cosmetics, and *materia medica* (medical matter) in the ancient world

Marco Cilione PhD¹  | Berenice Cavarra PhD¹ | Valentina Gazzaniga PhD² 

¹Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy

²Department of Medico-Surgical Science and Technology-Sapienza, University of Rome, Rome, Italy

Correspondence

Marco Cilione, PhD, Department of Biomedical, Metabolic and Neural Sciences, University of Modena and Reggio Emilia, Modena, Italy.
Email: marco.cilione@unimore.it

Abstract

Background: An article published in 2012 in the Journal of Cosmetic Dermatology discussed the historical sources presenting the Byzantine Empress Zoe Porphyrogenita as an expert in cosmetic and pharmacological remedies that could give their users a youthful appearance and a kind of eternal youth. However, it did not take into account a dermatological recipe attributed to Zoe which text transmission has preserved.

Aims: To examine some ingredients of Zoe's recipe from a historical medical point of view and contextualize the text in the tradition of ancient medical matter, physiology of aging, and gender pharmacological skills.

Methods: After contextualizing the recipe from the historical medical point of view, some of its ingredients have been analyzed in relation not only to their use in the most authoritative pharmacological and medical sources of antiquity but also to their symbolic meaning.

Results: The analysis of Zoe's dermatological recipe allowed to highlight:

1. The links between cosmetics and medicine in Greek and Roman Antiquity.
2. The reason why ancient sources dealing with medical matter attributed to certain substances and plants the power to save the human body from old age and decay.
3. The consistency between the ingredients of Zoe's recipe and the humoral physiology by genders and by age of Hippocrates.
4. The existence of a female tradition in pharmacological competence.

Conclusion: Cosmetic dermatology of antiquity is the perfect point in which survival of the myth and rational pharmacology overlap.

KEYWORDS

codex Pluteo, cosmetics, Empress Zoe, medical matter, physiology of aging

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1 | INTRODUCTION

For the ancient medical tradition, the distinction between inside and outside the body is not significant: the skin is a permeable boundary through which exchanges take place between qualities of the external world and the body humors. It is the surface that allows the physician to collect signs that can explain phenomena that occur internally, where the clinical gaze cannot reach. The Hippocratic treatise *On Diet* associates the skin with the stars that delimit the cosmos, thus indicating it as the starting point of life in the embryonic state. Accordingly, the analysis of the outer appearance is, for Hippocratic medicine, one of the fundamental tools that can indicate inner harmony or disharmony, that is, disease. Therefore, although medicine and cosmetics are two quite separate conceptual fields, it is not uncommon to find indications for the preparation of creams and facial dyes even within treatises that contain therapeutic indications; this depends on the close link between physiology and aesthetics, whereby in the Greco-Roman medical tradition natural beauty has a direct relationship with the good functioning of the body.^{1,2,3} A pale face, tending to yellow or bruise, or marked by wrinkles, certainly indicates a beauty defect, but above all a break in the humoral balance (and therefore illness), poisoning, or the start of the aging process, which in ancient theories represented a move away from full health due to cooling and drying of the body. The examination of the complexion and of the skin is, in fact, the first investigation carried out by the physician on the sick body: it is not by chance, for example, that in the treatises on women's diseases some generic cosmetic indications are mixed with more specific and therapeutic prescriptions, such as those for the elimination of the ascarids of the genitals and of the anus; or that colors used to beautify women's eyes also have a therapeutic power against eye diseases. The Hippocratic texts abound in prescriptions that are only cosmetic at first glance: nutraceuticals useful for moisturizing and illuminating the face (e.g., decoction of barley, white of dandelion, etc.). Nutraceuticals used to moisturize and brighten the face (e.g., barley decoction, egg white, lupine flour, fig poultice, cabbage root, and seeds) are in fact the first step towards more profound treatments for dry skin and wrinkles: a mixture of wax and rose oil and a rather severe scrub based on pulverized lead dust discs mixed with oil. The sequence in which these treatments are recommended is probably superimposed on the progressive dehydration that the skin undergoes at different ages of women as a result of aging. In general, the prescriptions seem to follow a sort of ascending climax, moving from the deviations of the skin's coloring to the most significant effects of dehydration, wrinkles. The state of the hair also testifies to the good functioning of the whole body, so that hair loss and alopecia, in addition to aesthetic discomfort, generally indicate a disturbance of the phlegm, which in men produces a caustic effect on the hair bulb during the secretion of the semen. In this case too, the suggested remedies, which appear to have a purely aesthetic purpose, actually aim to correct the humoral imbalance of the entire body by opening the pores and moisturizing the skin.

The recognition of cosmetics as a constituent part of medicine continued to mark the Hippocratic tradition in the Imperial and Late Antique Ages. Already Dioscorides had placed the substances useful for the creation of perfumes and cosmetic substances and those useful for the treatment of dermatological pathologies at the two opposite ends of a scale of classification based on their properties for correcting body imbalances⁴: Galen dedicates many observations in his treatise *De compositione medicamentorum secundum locos* (*On the composition of drugs according to places*) to the nature of a knowledge that aims at preserving the natural qualities of the body and not at artificially altering it: the preservation of the young and pleasant aspect and of the aesthetic quality is also the morally qualified aim of the medical intervention.⁵ No wonder, then, that even such a technical treatise is configured as a "culling of beauty-care manual" and contains many recipes dedicated to the treatment of skin and hair.

Even the late antique medical tradition, from Oribasius, the physician of the Emperor Julianus, to Aetius Amidenus, included what we would call cosmetic recipes in the *Libri medicinales*, thus confirming a very fluid borderline between aesthetic treatment and therapy.^{6,7}

2 | THE PHYSIOLOGY OF AGING

The view of old age in ancient medical doctrine owes much to the Hippocratic theory of the ages of human life, divided into periods regulated by an orderly pattern of humors and corresponding qualities. Childhood is characterized by warmth and moisture, which are necessary for the development of the body; old age, on the contrary, by the loss of moisture and progressive drying and cooling, which cause stiffening of the bones and limitation of movement⁸; in short, old age is a cooling process, antithetical to pediatric physiology.

The old belong to the limiting categories of physical, health, and social life: their defective bodies resemble those of women and share with them the characteristic of loss of vital qualities. The dry and progressively colder body is more prone to fractures; its fragility is signaled by the change in the state of the skin, which is thinner, but also less elastic due to the loss of body heat, which "thickens" the blood, generates wrinkles, and changes the color of the complexion, altering it towards loss of luminosity and gray (the color of the earth, which corresponds to the cold quality).

The change in color and quality of the skin appearance is therefore a sign of internal changes linked to cooling processes that can only be partially treated medically, by supplementing the moisture and heat that are waning with moist and warm remedies, such as a warm bath or the application of humectant plasters. Women, whose bodies are physiologically moist and defective beyond the norm throughout their lives, feel the difficulties of advancing age more acutely; when their bodies are overwhelmed by cold, diseases that have been lurking throughout their lives become looming and worrying. Medical intervention that limits the loss of heat and moisture, including dermatological correctives, can control the onset of more

serious systemic diseases, such as hysteria, a disease of the uterus that is no longer reproductive, in which the limited contact with vital heat and moisture provided by the sperm causes the organ to move around the body and escape (prolapse) in search of the qualities needed to maintain health.

Also, the Galenic doctrine,⁹ in accordance with the Hippocratic tradition, explains old age as an organic state determined by a cold-dry qualitative state: the whole Late Antique and Medieval medical tradition is based on it, as well as a large part of the Modern Age medical discourse on old age and possible corrections of its processes.

3 | FEMALE SOURCES OF DERMATOLOGICAL COSMETIC KNOWLEDGE

It is now widely accepted in medical historiography studying Greek and Roman antiquity that women were quite competent in the knowledge of plants with medicinal effects, their selection, and preparation. Mythography, epics, and medical literature testify a women's knowledge ranging between magic, empirical knowledge of medical properties of plants and animal remedies and their possible application especially in the field of "home medicine", women's illnesses, the reproductive phases of women's lives and the care of the skin, the body, and their good appearance. Beyond the citation of mythological figures, such as Helen and Circe, who were able to prepare remedies to alleviate the physical and mental pain of the Trojan heroes (*nepenthe*) or to prepare potions capable of transforming men into animals, it has been hypothesized that a large part of the pharmacopeia of the gynecological treatises in the *Corpus Hippocraticum* came from a sort of female knowledge, empirically developed through contact with substances that were easily available in the gardens and grounds adjacent to Greek houses and transmitted within the family, from mother to daughter or within female circles: many of the substances used evoke archaic cults connected with fertility and reproduction rites.¹⁰ Epigraphic sources and medical authors such as Dioscorides of Anazarbo or Galen of Pergamon also make explicit mention of female names capable of preparing potions, ointments, drugs to sedate pain (for example, a remedy to sedate the pain of lumbago attributed by Galen to Aquilla Secundilla).¹¹

This knowledge is largely lost, because the manuscript tradition has preserved only sporadic traces of an archaic, marginal, and fluid competence, in which it is difficult to establish the boundary between expertise and authorship (i.e., the difference between the "inventor" of a recipe and its author in written form); however, it is still well attested in Late Antiquity, which records gynecological and cosmetic recipes under female names.¹²

The two most interesting cases are those of Metrodora and Cleopatra. The former is the presumed author of a short treatise dating to the sixth century CE; the latter, mentioned by Galen, Pseudo-Galen, Paul of Aegina, Aetius, and Michael Italicus, a confused

character, not necessarily always the same woman and not surely identifiable with Queen Cleopatra. The name Cleopatra was in fact very common in Roman Egypt and Galen, who is the most authoritative source at our disposal, even though he knows very well the story of Queen Cleopatra and her tragic death, never associates the recipes that he seems to have read directly from the original text with the biographical profile of the queen of Egypt.¹³

It is possible that, in both cases, the feminine name hides male authorship and the "commercial" dynamics of a competence that is more desirable if attributed to female knowledge, better if of very high social status: it is a mechanism that, in waves, returns in the history of medicine until more recent times, as well testified, for example, by the famous case of the works attributed to Trotula de Ruggiero.^{14,15}

In any case, the "female" tradition transmitted under the names of Metrodora, Cleopatra, Pelagia, Elephantis, Lais, Salpe, Sotira, Spendousa, Aquilia, Antiochia, Originea, Samithra, Xanite is received by the Byzantine encyclopedists more freely than the classical tradition: the use of these "alternative" sources seems to fill the void left by Galen in the treatment of women's disorders and responds to the socially growing needs for health and beauty in a changing world (Buzzi-Calà).

Oribasius of Pergamum, Emperor Julian's physician, although not mentioning women as authors, included many cosmetic recipes in his works; instead Aetius, who wrote in the first half of the 6th century AD and collected in his *Libri medicinales* remedies for dark circles under the eyes, wrinkle correctors, soaps to lighten and brighten the complexion of the face, explicitly mentions female sources. Many of these remedies are intended to moisturize and restore the elasticity typical of youth: it seems no coincidence that among the women cited as authors, an Eugerasia appears, whose name recalls the myth of serene aging and the wisdom that goes with it.

4 | ZOE'S RECIPE AND ITS MEANINGS

Michael Psellus, a 11th century Byzantine historian, describes in his *Chronographia* the Empress Zoe Porphyrogenita as a woman engaged in "transforming the nature of essences to make perfumes, create new and particular fragrances or vary the already known ones [...]". Zoe, living in Constantinople between 978 and 1050, shared the kingdom with three husbands until the year of her death: undoubtedly a powerful woman.

The fourteenth-century codex Pluteo VII.19.32 in the Medicean-Laurentian Library in Florence, attributes the recipe for an ointment to the Empress (ff. 226^v-227^r).¹⁶ The recipe is probably pseudo-epigraphic, that is, of an unknown author. However, Zoe's skill in preparing cosmetic ointments is well attested to by contemporary sources, which mention her extraordinarily youthful appearance, guaranteed by the preparation of creams and secret ointments in specially constructed laboratories in the imperial palace. In Zoe's case, the search for eternal youth had a political and social

significance that went beyond the simple medical search for remedies to delay the drying out of the body and postpone the degenerative processes typical of old age. The Hellenistic Ptolemaic courts and the Byzantine Imperial court were pervaded by doctrines of kingship linking the public image of the sovereign (and therefore, his youth, beauty, and strength) with the image of a power that could not degenerate with the passing of time.

For this reason, throughout Late Antiquity, dermatological cosmetics took on an important role within the *materia medica*, as a skill not only guaranteeing good health (and therefore, continuity of power), but also transmitting a public image of a long-lived, luminous, and incorruptible political power.

As seen, Zoe is not the first woman having interest in cosmetics. Galen, the famous physician of Emperor Marcus Aurelius, in his treatise on *Compound drugs* often refers to Cleopatra as expert in cosmetics, particularly in hair treatments. As a matter of fact, pharmacology was one of the fundamental teachings in the Alexandrian medical formation, and it must have played a significant role in the Egyptian high-socially level society. In particular, Philotas of Amphissa, a physician of the Ptolemaic court, offered an extraordinary example of how the emergency treatments, prescribed for soldiers and gladiators wounds, could be wisely

reconverted for cosmetic use. Philotas was well known for having invented a compound to cure wounds, substantially made of fish glue, used to favor cicatrizing. This ointment, conveniently processed with bee wax, oil of terebinth, olive oil and myrrh, had both a sealing and emollient effect. Therefore, it is not surprising that, in order to have a public appealing effect, the author known as Cleopatra used Philotas's ointment as a skin cosmetic, after having "socially" corrected its odor.¹⁷

Hence, Alexandria is an intersection spot for pharmacology, cosmetics, and power, and from this tradition the cosmetic ability of Princess Zoe seems to descend. As much as it has been possible to reconstruct a kind of medical school around to Ptolemaic court with precise competences in pharmacology and toxicology and a peculiar attention to dermatology, in the same way, it is possible to detect a sort of general knowledge in pharmacology in the Byzantine upper class due to the spread of Medical Matter, the most famous treatise of pharmacology due to Pedianus Dioscorides, the greatest pharmacologist of Roman times (1st century AD). In fact, many manuscripts of this handbook were circulating at that time. The Medical Matter organizes the topic according to the therapeutic properties of plants taken into consideration. The manuscript known as Vienna Dioscorides, a gift for Roman imperial princess Juliana

TABLE 1 The three substances of Zoe's recipe connected to myths of regeneration and rebirth

Lily bulbs ¹⁷	Myrrh	Honey
<p>Zoe's ointment involves the use lily bulbs cooked in honey and chopped before being mixed in the compound. About these bulbs Theophrastus, in his <i>History of plants</i>, notes how the plant continues blooming even after the liquid contained dries out, because of an extraordinary reproductive power. The lily in question is probably the <i>Lilium Candidum</i>, described in Theophrastus's treatise <i>On perfumes</i> as ingredient of a perfumed ointment called <i>sousinon</i>, which also includes honey and myrrh among its ingredients. Plinius the Elder as much as Dioscorides identify in the Near East the region where the most precious lilies come from. However, if in <i>sousinon</i> case the part of the plant utilized is the flower, in particular chalice and pistils, in Zoe's compound instead it is the bulb, very likely because she wants to gather its regenerating juice: Plinius the Elder states, in fact, that one root only is able to produce 50 bulbs.</p> <p>Hippocrates often refers to lilies oil among the ingredients of pessaries for uterine distention. Dioscorides deals more generally about the power of <i>lilium candidum</i> to alleviate inflammation processes like those deriving from scorpion bites or burns, but also to purify face skin or level wrinkles: princess Zoe is believed not have had any wrinkles at 70.</p>	<p>Also, in the use of myrrh the symbolic, pharmaceutical, and cosmetic levels overlap. The history of Myrrh is a classic myth of metamorphosis: the girl falls in love with her father, has intercourse with him and taken by shame, flees praying the gods not to contaminate the world of living or dead people with her presence: she wants to be subtracted, as the Latin poet Ovid says, from life and death. The tree in which the gods mercifully transform her, in fact, produces a precious resin utilized in embalming deads: Greek historian Herodotus, in his description of embalming techniques, tells that, after having been eviscerated, the abdomen was filled up with myrrh, probably with the aim of drying and deodorizing tissues.</p> <p>Theophrastus detects in the myrrh called "stakte" the best quality: it is the resin which spontaneously oozes from the tree. It allows a better preservation of the perfumes which it is mixed to. This power of preservation, of which the myth of the girl, suspended between life and death, explains the origin, is the symbolic reason of its present in Zoe's ointment which has to prevent material corruption. From a pharmacological viewpoint also myrrh has anti-inflammatory, emollient, cicatrizing, and astringent properties, therefore suitable for a face ointment.</p>	<p>Honey is connected to gods and their feeding. Newborn Zeus, hidden by his mother Rea in the island of Crete to avoid that his father Cronus would eat him, was fed on honey by Melissa, the daughter of Melisseus, king of Crete. Greeks believed honey to fall from the sky onto flowers where the bees collect it. Already in the pap. Ebers, honey was indicated among the base ingredients of many therapeutic compounds such as eye ointments, remedies for burns and wounds, pessaries for uterine contraction. <i>CH</i> prescribes honey for ulcers by boiling it in a pot with substances such as turpentine, wine, grape juice, bull's gall, nettle shavings, frankincense, and myrrh, as in Zoe's recipe. Also, Theophrastus considers honey useful in the treatment of wounds and sores. Dioscorides dedicates a certain attention to honey and to its therapeutic properties. Topical applications of honey were believed to be useful to heal wounds, sores, and bites of snakes and mad dogs. Sardinian honey and Heracleian honey were used to heal sunburn and bruises.</p>

Anicia, witnesses that the art of healing in Byzantium was not only a technique, but also a part of cultural interests of intellectuals and aristocracy even when mixed with popular believes of quacks and court magicians. It is possible that Zoe may have partly transformed her pharmacological readings into a skillful hobby, as Michael Psellus witnesses in his tale.

The tradition of cataloging and organizing scientific material belongs to the Alexandrian culture of Aristotelian matrix. In this sense, when speaking of plants and their therapeutic properties we cannot but refer to Theophrastus of Eresus, Aristotle's disciple, also the author of a treatise on perfumes.

The tight link between therapeutic pharmakon and cosmetic compound may also be found comparing the Zoe's ointment recipe and Galen's instructions on compounds. Some ingredients clearly have a symbolic value further than functional: honey, myrrh, and lily bulbs evocate preservation and immortality. Other ingredients evocate fertility and regeneration: figs, prunes, and dates.

Zoe's ointment, hence, is a compound which ingredients offer a clear idea of overlapping of symbology, pharmacology, and cosmetics in ancient therapeutic believes. In particular, among other ingredients, the use of lily bulbs, honey, and myrrh express the possibility of regeneration and an obstacle to material corruption. In fact, if it is true that Galen knows the effect of a substance on a part of the body because of specific qualities of such substance, and if it is true that among these qualities also the symbolic ones should be considered, then we necessarily have to examine the meaning of ingredients in a pharmacological or cosmetic compound not only from an historic medical point of view, but also from an anthropologic cultural viewpoint.

Table 1 summarizes the main traits linking the three substances to myths of regeneration and rebirth.

5 | CONCLUSIONS

The use of substances which in mythical and sapiential tradition are related to the ideas of perpetual renewal and rebirth is not unique within the ancient pharmacological and cosmetic tradition. The same criteria apply to the medicinal uses of barley, oil, grapes, and wine, which continued throughout the tradition into Late Antiquity and beyond: the symbolic significance attributed in ancient cultures to plants and elements of the natural world survives even when they become medicines or cosmetics. Many studies have long shown that the rationality of ancient Hippocratic medical tradition, even in its long duration, is more pretended than real: ancient science still unconsciously stands very long on the boundaries separating the mythical from the rational, particularly in areas of tradition, such as *materia medica* and pharmacology. The historiographical idea that women in Ancient and Late Ancient times, silent above all in scientific sources, can be traced in an indirect tradition concerning the knowledge, cooking, and preparation of plants connected to the rites of regeneration and rebirth

of the earth is confirmed in the analysis of sources, such as Zoe's recipe, dedicated to the maintenance of strength, beauty, health, and power.

ACKNOWLEDGMENT

Open Access Funding provided by Universita degli Studi di Modena e Reggio Emilia within the CRUI-CARE Agreement.

ETHICS STATEMENT

None of the 4 items for ethical statements deals with this paper.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

ORCID

Marco Cilione  <https://orcid.org/0000-0002-6960-369X>

Valentina Gazzaniga  <https://orcid.org/0000-0003-2110-4856>

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How to cite this article: Cilione M, Cavarra B, Gazzaniga V. Once again on the Empress Zoe: Women, dermatology, cosmetics, and *materia medica* (medical matter) in the ancient world. *J Cosmet Dermatol*. 2022;00:1-6. doi: [10.1111/jocd.15239](https://doi.org/10.1111/jocd.15239)