Drugs and Medicines in the Roman World

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The doctor stepped softly out of the sickroom, where Licinius was breathing his last. Rattling, rasping, wheezing, gasping for air, the senator had accepted death and requested that his friend and physician, the medicus Marcus Junius Asclepiades, leave the apoplectic nearest to the bedside. Caecina's son, Publius Licinius Caecina, was last to leave the room, mirth with the rich smell of smoking libanotus. Soon there was the faint tinkle of the lozenges dropping to the bottom of a glass cup, followed by a crackle as the lozenges snapped and melted over a flame; and then the mellow gurgle of wine poured into the cup exorcising the kiss of cooling. Silence. A quick gulp. Marcus Junius Asclepiades whispered, "He will sleep, Mr. A death of gentle descent, freeing him from his unbearable body, a death by the earliest glimpses of Apollo's chariot in the dawn."

Licinius' wife of three decades had suggested that they burn the fair less expensive glechon in the sickroom, but the medicus noted that this medicamentum was useful in the birthing chambers specifically. It was not appropriate for the production of reverential aromas in the resting place of the gravely ill. Julia had reflected a moment and remembered: "Indeed, yes, the attending obstetrician did use glechon when Publius was given to us. So much blood, nicely stench'd by the smoke from the glechon." Marcus Junius Asclepiades quietly wept. "Summon the undertakers and the mourners: we will shortly need them."

The scene here depicted is part of social and medical history in the Roman Empire. Publius Licinius Caecina is a real historical figure, recorded as the son of a senator who had committed suicide in Roman Spain a generation before Pliny the Elder set down his Natural History. (Pliny dedicated his 37-volume compendium to Titus the Emperor in AD 77.) A brief account of the suicide is in Natural History, XX, 199.

Medicaments ("drugs," "remedies," sometimes "poisons," "cosmetics," or "dyes") were prominent in the lives of the Romans. The best physicians were well-schooled in pharmaceutical lore, with an armamentarium of drugs (Fig. 2) derived generally from botanicals, but often from animals and minerals. The quasi-fictional scene of the elder Licinius' suicide includes an attending physician, usually called a medicus in Latin or a iatros in Greek. Here Marcus Junius Asclepiades is marked as a friend of the dying man. (Many medici styled themselves with the cognomen Asclepiades, presumably to be identified with Asclepius, the ancient god of medicine.) Good physicians were frequently clients of powerful families in the Roman Empire, sometimes with both families and physicians interlocked over several generations. Marcus the medicus probably had learned his art as an apprentice to an experienced physician. Or perhaps he had gained some valued years attached as a medicus to one of the legions which had conquer Britain after AD 43.

Julia's recollection of her obstetrician ("midwife") also reflects the ordinarily assumed knowledge of drugs by these experienced women. Midwives were recognized as professionals in their own right, particularly in terms of knowledge of drugs, medicines, and poisons. Roman
In ancient life very much at variance from modern, city-based living in the West. Almost everyone, from the most noble to the lowest level of society, was in some way intimately connected with the land. Wealth almost always was measured in land and its agricultural production, whether for a known market in cash crops, or in terms of what a given plot of land might produce for subsistence.

Nearly everyone knew plants of many varieties from earliest childhood. Most knew the numerous teas brewed from “seeds” (usually unnamed) gathered by the roadbeds or in fallow fields quickly accessed from all but the very largest urban centers. Almost everyone knew something about the finest vegetables and fruits, the best grains employed for the highest grades of breads. Anyone who had any pretense to high culture knew by definition the best wines and the grapes from which these vintages were fermented. Roman wine-fanciers could easily identify locale and year with a precision perhaps unmatched even today. Good cheeses (and poor ones) were known by their distinctive tastes and aromas, and high-quality olive oil was treasured for its clarity (for cooking) and for its lubricant properties. Oil seeds and their marvellously varied oils—sesame, linseed (flax), poppy (tolle) free of any narcotic properties, and many others—were known by consistency and clarity, especially by the talented cooks who were members of all Roman households claiming any sort of status.

Cosmetics, including the famous henna or camphire (Fig. 3), were always available in a daily-fresh supply. Henna was an item treasured by Roman women who used the finely ground green powder to color their fingernails, toenails, and hair; a fashionable reddish-brown. Drugs, foods, and cosmetics were intermeshed in Roman perceptions, much as we think of spices as drugs while also using them to enhance the flavors of foods, or as we think of fragrant emollients as useful in both perfumes and moisturizing creams for the skin.

The first surviving herbal in Greek is that by Theophrastus of Eresus (ca. 370–285 BC), the most brilliant of Aristotle’s students. Theophrastus put down his inquiry into plants about 300 BC, and Book IX of this important tract on botanical morphology is devoted to medicinal use. The ultimate sources for practical data were the ever-present phytantrai (“procurers”) and pharmakoophos (sing. pharmakophagos; “drug seller” or “apothecary”), who provided Theophrastus with much information on what parts of what plants were useful as drugs (pharmake, sing. pharmakeon). Of the 500 or so plants that can be identified in Theophrastus with some assurance, about 70 are medicinals, a fraction of the drugs known and derived from plants and animals in Greek antiquity. Poisons were also well understood, including the infamous hemlock, qualified by Socrates at the behest of the Athenians in 399 BC. Not surprisingly, Athenians knew exactly how hemlock was to be prepared, and the democracy had a Committee of Eleven elected to superintend executions for capital crimes. The Committee of Eleven directed the preparation of this poison, and everyone was presumed to know the process and its results.

Citizens of Athens, the large polis, that boasted Athens as its fortified urban and cultural center, also knew well the plants of contraceptive use. Aristophanes (ca. 457–385 BC) could assume easy comprehension of jokes and puns on blithe/gleam in his uprisings and earthy comedies Peace (421 BC) and Lysistrata (produced in 411 BC). The commonplace and conventional pennyroyal was, after all, indispensable for procreating so any levels of stability to stay in business. Greek girls could also have employed the garden-varieté drugs (Fig. 4), a degradation of its leaves giving control over menstruation, as well as providing early abortions as necessary. Tragedies, too, had their botanicals. Sophocles’ ca. 496–406 BC) lost play Thetis had a vivid scene in which Medusa in a frenzy danced naked in the moonlight after intimidating the juice of the so-called deadly carrot (Thysium garganico L.). This plant was another of the widespread wild species known to all who maintained small or large plots anywhere among the polies of Greece.

The Athenian agora, much as would be true for marketplaces in later Hellenistic and Roman times, featured stalls displayed for the sale of particular vegetables, always fresh, always “in season.” One reads of specialized vendors who hawked various kinds of olive oil, the oils of seeds, fruits, and pharmako that included sage, several types of mint (e.g., spearmint (Fig. 5), horsemint, Bergamot mint, woolly mint, and pennyroyal),
mallows (especially the high mallow, used for mucilage, as an expectorant, and a decoction of the flowers as an excellent gargle and mouthwash; Fig. 6), and often exotics brought from somewhere in the "East." Generally one could find black pepper ( Piper nigrum L.), depending on trade and sailing conditions to and from India and points further east. (The red peppers (Capsicum spp.) were unknown in European or Asian diets or pharmacopoeias until the discovery of the New World.)

Greek and Roman diets were quite healthy and highly flavored; some of the favored additives were garam (fermented fish entrails), pepper from India, cinnamon, and cassia. Local spices known from Mycenaean times (ca. 2500 to ca. 1000 BC) included aetrum (Fig. 7), cinmmun, and a number of others. The Linear B tablets from Mycenaean Pylos (dated to ca. 1200 BC) suggest a thriving perfume industry, so that from earliest times pharmaceuticals were important in the culinary arts, perfumery, and medicinals.

ANIMAL PRODUCTS

Pharmaka also incorporated animal products: honey, beeswax, the ill-famed solution made from blister beetles (usually Lytta spp., still around as "Spanish fly"), fats, marrows, milks, crushed cockroaches, concotions of boiled snakes, and even the reins procured from the stomachs of seals, goats, cows, and other animals. Honey is an excellent ingredient for wound dressings. Its high pH (3.9 on average) enabled Greek and Roman physicians to apply fats, oils, and honey in bandages on wounds and injuries, effectively "drying" them out and killing many bacteria in the process. Beeswax was another item of commerce, and any owner of a set of hives knew the flowers whose bees gained their nectar and constructed their combs. Not only could physicians use beeswax as the finest of foundations for their pastilles and plasters—was it easily melted and applied, and adheres harmlessly to the wound—but these "cerae" (terra is Latin for "wax") could be sold in bulk for making sealants of many kinds, from jars to seals attached to letters. Wax tablets took the place of portable chalk boards in the primary schools of classical antiquity; writing in wax is quickly smoothed out and the "erased" tablet reusable indefinitely. Wax and honey aphrodisiacs could tell a particular kind by locale, each having its own unique consistency and taste. (Poison honeys were also known.)

Honey is an excellent ingredient for wound dressings.

The use of blister beetles in aphrodisiacs and poisons was common enough in the Greco-Roman world to engender a large literature. The old hexameter poems by Nicander of Colophon (fl. ca. 130 BC), Tiberius and Alexipharmaca, detail characteristics of presumably poisonous animals, as well as poisons derived from plants and minerals, along with antidotes. Kantharos (the solution made from two species of blister beetles) is prominent, and Nicander and his sources suggest a number of antidotes, with one actually being beneficial (a quick and massive dosage of chalk), quite similar to our koalin.

Many fats are listed by Dioscorides in his brilliantly conceived Asterius Medica of ca. AD 70. Here are the fats of bears, goats, and lions, and the more easily obtained fats and greases from sheep (lanolin or "wool grease" is recognized), ducks, geese, and other animals.
Marrows are likewise listed, as are milks and bloods of many species of reptiles, birds, and mammals, including humans.

**DIOSCORIDES AND THE MATERIA MEDICA**

Dioscorides of Anazarbus is one of the great figures in the history of medicine and pharmacy, and his *Materia Medica* became the text on drugs of all kinds. Galen of Pergamon, the polymathic physician and physician (AD 129–after 210), quotes and gives Dioscorides enormous respect, while ignoring the Anazarbicus's prescient "drug affinity" system, that is, what drugs did when administered to patients for particular ailments. Dioscorides' methodologies demanded that a physician be a field botanist, knowing plants in all of their stages of growth, knowing the best ways in which to gather herbs and their specific preparation techniques, and observing the detailed actions of these drugs when given for treatment to alleviate illnesses.

Dioscorides had little patience for the "vain prating" of philosophers as they attempted explanations for pharmaceutical actions. But he does employ the venerable concepts of the Four Elements (the Aristotelian Fire, Earth, Air, and Water) and the Four Qualities (the Hot, the Wet, the Cold, and the Dryy) to propound how compounds could be mixed and how simples could work against diseases characterized by any one of the Qualities. There is no trace of the famous Hippocratic-Galenic humorological pathology, which speaks of disease as an excess (Greek *patheia*; sometimes a "fullness" or "satiation") of one of the Four Humors (Blood, Phlegm, Yellow bile, and Black bile), but many physicians in the Roman Empire did assume a set of humors as explanation of health and disease. (Kratia was the state of perfect "balancing" among the Four Humors, *dykhuvia* the "imbalance" of disease.)

Painting observation distinguishes Dioscorides' drug lore, and many details in the *Materia Medica* are replicated by Galen and other Roman authors on medicine. Although Dioscorides loathed alphabetical lists of drugs and plants, this is exactly what happened to his collection of data in the *Materia Medica* Galen chose to rearrange the ordering of the 600 odd pharmaceutical substances, and alphabetical tabulations of Dioscorides' drugs were in circulation in Greek at the latest by the middle of the 4th century.

Crataeus, physician to Mithridates VI of Pontus (ca. 120–63 BC), produced an illustrated herbal, but Pliny the Elder (*Natural History*, XXV, 8) complained about its badly mangled images, perhaps indicative of the difficulty in depicting colored plants in the usual rolls of papyrus. Once the form of the "book" shifted from the physicians on live human subjects led to Mithridates' equally infamous ability to quaff any or all toxic substances without ill-effect. Like Dioscorides, Crataeus has his best remain in the Byzantine artistic convention representing conversion. Below Crataeus is the famous Alexandrian pharmacologist, Apollonius Mys (fl. circa 50 BC), noted by Galen as one of the best in his day.

The Byzantine artists commissioned to illuminate the numerous plants, snakes, insects, and animals in the text, "experiments" with ad 120, whose collected works on diagnosis, prognosis, and therapies enjoyed widespread respect. To Galen's right is Crataeus (fl. circa 90–70 BC). Infamous as the toxicologist-pharmacist to Mithridates VI of Pontus, Crataeus' "experiments" with Potnia, Galen's "expediency" with as a dye and a menstrual-control drug.

**Courtesy of A-Z Botanical Collections**

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papyrus roll to the flat sheets of the codex after AD 350 or so, illuminations of all kinds could be incorporated in the recopied texts. One of the earliest surviving of these illustrated manuscripts is the Codex Anicia Juliana, dated to AD 512 (Fig. 8). This is the most luxurious of Byzantine scientific manuscripts: it contains 498 miniatures, mostly of the plants in Dioscorides’ Materia Medica arranged alphabetically (see Figs. 1, 6, 8, 9). The Codex (listed as Greek medical MS No. 1 in the National Library in Vienna) also has illuminations accompanying prose summaries of Nicander’s Thierica and Alesipharmacia. The plants-as-drugs pictured are occasionally masterpieces of painting and occasionally simply dreadful. Among the folios that provide rather good depictions is folio 221v, labeled MIRO SHUTPO KOHADOC; the opium poppy (see Fig. 1), about which Dioscorides writes:

>a common property among the poppies is cooking . . . the leaves and capsules are decocted (viz. "heated down") in water and applied as foramina to induce sleep; and the decoction is drunk for insomnia, and the capsules triturated (viz. "pounded finely") and mixed with a poultice of hulled barley and made into plasters are fitting for inflamed boils and cases of erysipelas. One should make them into lozenges—pounding them in a mortar while they are still green—and drying

them to lay them up in storage and thereby employ them . . . the capsules themselves being boiled down in water as far as one half, then again boiled with honey until the moisture condenses out, they make a drug which is a pain-killing lozenge for coughs and discharges of the windpipe and disorders of the bowels . . . (2)

(3) The seed of the black poppy triturated is drunk with wine for diarrhoea and excessive menstrual flow; it is applied as a plaster with water to the forhead and temples of insomnians. The latex itself is, however, yet more cooling and thickening and drying and taken in as small a quantity as a bitter veris, seed, it is an amydone and sleep inducer and promotes digestion, being useful for coughs and intestinal disorders; but too much being drunk produces one into a lethargy in sleep, and it kills. (Materia Medica, IV, 64 [ed. Wellmann, II, pp. 218-221])

Folio 31 pictures anthemis (Anthemis spp., the chamomile; Fig. 9), and on anthemis Dioscorides says:

The roots and flowers of the whole herb have heating and thinning properties; taken in a drink, or administered in a site-bath, they draw out a woman’s menstrual flow as well as an undeveloped fetus, bladder stones, and urine. These are also drunk for treatment of bowel gas and for intestinal
Glossary of Plants

Arabiss myrrh
Commiphrora myrrha (Nees.) Engl.

black pepper
Piper nigrum L.

chamomile
Anthemis nobilis

cinnamon
Cinnamomum zeylanicum L.

deadly nightshade
Atropa belladonna L.

drankincense
Boswellia carterii Birdw.

hemlock
Conium maculatum L.

henna or cowslip
Lactuca virosa L.

high mallow
Malva silvatica L.

mints

Bergamot mint
Mentha aquatica L.

barberries
Mentha longifolia (L.) Huds.

pennyroyal
Mentha pulegium L.

peppermint
Mentha piperita L.

water mint
Mentha rotundifolia (L.) Huds.

spike poppy
Papaver somniferum L.


tsaffron
Crocus sativus L.


obstructions and for jaundice, and they cleanse and cure liver complaints. And decocted, these are used in fomentations as treatments for the bladder. But more useful for those who suffer from stones are those colored purple, the white-flowered and gold-flowered kinds are more diuretic. They are also curative for ulcers of the eye (viz. ichthyral fistula) being laid on as plasters, and chewed they cure thrush in children. (Materia Medica, III, 137.2 [ed. Wellmann, I, p. 146])

In his Preface to the Materia Medica (ed. Wellmann, I, pp. 1-5), Dioscorides offers a clipped synopsis of why his compendium of pharmacologic lore improves markedly on the efforts of his predecessors. He also admonishes anyone reading his account to constantly augment the mass of details by "extending...the range of preparations and mixtures...to trials on patients, for the knowledge of each individual drug has a great deal to contribute." (Preface, 3 [ed. Wellmann, I, p. 2]). The Preface presents the most precise and inclusive summary of drug preparation and storage that we have from classical antiquity, and modern pharmacists can appreciate the specifics.

Extract juices from plants by infusion [or decoction] when the stems are recently sprouted, and similarly with leaves; but to gain juices and drop-like gums by tapping, take the stems and cut them while still in their prime. Gather roots for laying up in storage, as well as roots for juices and root barks, when the plants are beginning to shed their leaves. The clean roots should be dried out immediately in areas free from moisture, but roots with earth or clay adhering should be washed with water. Flowers and such parts that have a sweet smelling fragrance should be laid down in small dry boxes of lime-wood, but occasionally they can be wrapped serviceably in papyrus or leaves to preserve their seeds. As for moist drugs, any container made of tin, silver, glass, or horn will be suitable. An earthenware vessel is well adapted provided it is not too thin, and, among wooden containers, those of boxwood. Copper vessels will be suitable for moist eye-drugs and for drugs prepared with vinegar, raw pitch or juniper oil. But stow animal fats and narcotics in tin containers. (Preface, 9 [ed. Wellmann, I, pp. 4-5])

The drug booms in Roman fora featured a large variety of concoctions, compounds, and simples used in culinary recipes, medications, and cosmetics. The substances incorporated many land and sea creatures, as well as plants. Typical are the following from Dioscorides' Materia Medica:

A sea horse is a small sea creature, which being burned, the ash is prepared as an ointment with raw pitch, or hog's fat, or oil of marjoram, and smeared on a bald spot brings back hair to those afflicted with alopecia. (Materia Medica, II, 3 [ed. Wellmann, I, p. 122])

Reduced to ash (viz. "calcined"), a purple shellfish has a desiccant property for deterring cleaning of teeth, for checking fleas overgrowths, and for cleaning out sores and causing them to scar over. And trumper shells calcined have the same properties as the purple shellfish, but the trumpet shells are more caustic and if one fills them with salt and calcines them in an unfired earthenware pot, they are beneficial as a tooth powder, as well as for burns, being used as an ointment smeared on. But the drug should be allowed to become dry and hardened like a potash: for the burn having scarred over, the ointment falls off spontaneously. (Materia Medica, II, 4 [ed. Wellmann, I, pp. 122-23])

Fresh elms are good for the bowels, but the soup made from them is best. Pickled, reduced to ash, pounded smooth with Greek juniper oil and dropped on pleased eyelids, the eyelashes will not grow back again. And the soup made from the small rectangular bivalves and from other cockle-like shellfish move the bowels (viz. act as laxatives), being boiled with a little water. And this kind of soup is taken with wine. (Materia Medica, II, 6 [ed. Wellmann, I, p. 123])

Trirurated with myrrh and frankincense and applied as a plaster, the flesh of these snails close up opened wounds, particularly the wounds in and about the tendons; and trirurated with vinegar, they stop bleeding from the nostrils. And the living animal gulped down (especially the Libyan snail) alleviates stomach pains. Pounded whole with its shell and a small portion drunk with wine mixed with myrrh, the small cuts pains of the bowels and the bladder. And the land snail also glues hair together: one inserts a needle down into the snail's flesh and attaches or fastens the hair with the gummy matter brought out on the point of the needle. (Materia Medica, II, 9.3 [ed. Wellmann, I, p. 125])

Dioscorides and other medical and pharmacological sources reveal a rambling series of details on plants, animals, spices, oils, wines, vines, and minerals: clear indications of deep and venerated expertise necessarily shared by shoppers in the agora and forum. Drug fraud was expectedly common, and Dioscorides frequently adds instructions for detection of fakes from the "real stuff," as in the case of the latex of the opium

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**Fig. II. Unguentarium of pale green glass, 1st century AD.** This small bottle probably stored the kind of sweet-scented medicinal oils prepared in jars such as that in Figure 4. Provenance unknown. UPM no. MS 52664. Donated by Mrs. William Pepper (1919). H: 11.5 cm.
In spite of official attempts, sporadic at best, to regulate prices and products in the Roman Empire, most people bartered and bargained in the forum or agora as they had generations before them. Even the great warehouses (the heraeum) had limited impact, although the Herrea Piperaetoraria in Rome (established under Domitian [AD 81–96]) functioned to store “exotic drugs and peppers (ard) the convenient retailing of these in one place where adequate control would be exercised” (Rickman 1971:106). Since the great majority of settlements in the Roman Empire were small country towns, most markets flourished far from official sanctions and Dioscorides’ recommendations for on-the-spot testing of drugs and spices remained pertinent.

One easily pictures the rhetorician’s booth in the marketplace, stuffed with linwood boxes, various containers of boxwood, and copper vessels running over with the always-in-demand odyria (“eye-salves”) or giving forth the pinences of pine resin, the sharp odors of juniper oil, or the ordinary tincture of vinegar.

The pharmacopoeias would have his array of glass flasks filled with semi-fluids to be examined (one rolled the substance between thumb and forefinger to test consistency) or smelled once stoppers were removed (Figs. 10, 11). These semi-pasty materials were also stored in the hollow horns of diverse bovines; the rootcutter and drug seller would have most preparations in horns, the cheapest containers. Silver canisters (perhaps in the form of the well-known pyx) would be set toward the back of the stall to hold the expensive drugstuffs, perhaps ready-made in oil, or frankincense melted down by the vendor for the day’s sales. And there would be many brightly colored flower petals scattered along the ruder shelving on each side of the stall, each of the flower wrapped in Egyptian papyrus or some carefully arranged selection of local leaves. Anyone entering the booth would be met by a melange of aromas, a potpourri of scents that camouflaged the medley of drugstuffs, spices, cosmetics, and medicines.