

# Aulus Cornelius Celsus' De Medicina and His Contributions to Knowledge on Skin Diseases

**Franjo Gruber**

Retired professor of dermatovenerology, Medical University of Rijeka, Rijeka, Croatia

**Corresponding author:**

Prof. Franjo Gruber, MD, PhD

Rijeka, Croatia

[franjo.gruber1@ri.t-com.hr](mailto:franjo.gruber1@ri.t-com.hr)

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**ABSTRACT** The book *De Medicina* by Aulus Cornelius Celsus was the first complete treatise about medicine written in Latin. We know little about his life. The monography consists of eight books describing all that was known within the whole sphere of medicine and surgery in the first century AD. In the introduction (proemium), he also described the history of medicine until his time and also delineated the treatment of diseases that may be dietetic, medication-based or surgical. The treatise describes approximately forty skin diseases in a concise and clear style.

**KEY WORDS:** Celsus, Roman medicine, *De Medicina*, Latin, skin diseases

## INTRODUCTION

The Roman people had an important role in the Western world. It began with Romulus in 753 BC, and the period of kings (753-510 BC), continued with the republic (510-30 BC) and then the emperors (30 BC to 473 AD) and ended in the fifth century AD. Roman civilization transmitted many great contribution to posterity, in form of government, architecture, literature, engineering, legislation, roads, bridges, aqueducts, drainage system (Cloaca Maxima), public baths, and many others (1). Herein we describe some aspects of medicine among the Romans, particularly those associated with the first author who wrote a complete book about medicine in the Latin language: Aulus Cornelius Celsus. It is unfortunate that we know very little about the life of Aulus Cornelius Celsus. Additionally, his first name was in doubt and for was read as Aurelius for a long time (2,3), but this was not a *praenomen*. It is most likely it was Aulus. He was born around the year 25 BC and died about 50 AD. He lived approximately around the time of Christ i.e., during the reigns of the first emperors: Augustus (31 BC to 14 AD) and Tiberius (14-37 AD); some have suggested that he was perhaps of Spanish, Gallic, or Italic origin (4). We do not know his place of birth. He came from an influential and respectable patri-

cian family and lived in Rome (4). He acquired a good knowledge of Latin and Greek languages, his literary output was enormous, and he was learned on many subjects. Celsus, together with Marcus Terentius Varro (116-27 BC), Marcus Vitruvius (first century BC), and Pliny the Elder (23-79 AD), was among the greatest ancient Romans encyclopedists (5). He wrote a multi-volume treatise "*De Artibus*"; a general encyclopedia in Latin that included agriculture – five books, rhetoric – seven books, philosophy – six books, military science, medicine, and jurisprudence (6). Only the part dealing with medicine, entitled "*De Re Medicina*" or "*De Medicina Libri Octo*" consisting of eight books, has survived and provides an extensive picture of the medical art and surgery during the first century of the Christian era (7). The manuscript was lost for many centuries and brought to light in 1427 by Tommaso Petrucelli (1397-1455), the future Pope Nicholas V, in the library of the St. Ambrose church in Milan and put in press in 1478 in Florence (4). It was one of the first medical books to be printed, before the works of Hippocrates and Galen.

Soon, many new editions had been printed and translated into English, Italian, and French. This book is of great importance because it preserves a record

of the development of Greek and Roman medicine at that time, while also presenting the history of medicine ranging from physicians of Homer's time (Machon and Podaleirios during the Trojan War) to the physicians in the first century AD. Celsus also cited some philosophers who were also physicians, such as Pythagoras, Empedocles, and Democritus. Particular attention was devoted to Hippocrates and Alexandrian physicians (Erasistratus, Herophilus, Philoxenus), but also some physicians working in Rome, such as Asclepiades of Bithynia known for his "atomistic theory" of the body and his treatment that was "curare cito, tuto, jucunde" (cure swiftly, safely, and gladly) (8), and his disciple Themison, as well as some Roman surgeons: Meges, Tryphon, and Eulpistus. Celsus also explained the different medical sects or "schools": the Dogmatic (Rationalist) school, the oldest medical school was founded by Polybus, son in law of Hippocrates (9), with the name being derived from the word "dogma" which means tenet or opinion. According to Celsus, they employed dissection and even vivisection (Ptolemaic Alexandria) to become acquainted with the internal organs (10). They believed that disease was caused by an imbalance of bodily humors, and Hippocrates, Herophilus, and Erasistratus were their ancestors. The Methodists were a school that believed that our body was composed of atoms and pores and that research into the causes was unnecessary. Their founders were disciples of Asclepiades (11). The Empiricists were proponents of empirical observation to determine the necessary treatment (9). They condemned vivisection or dissection and believed that medicine must be based on experience acquired by oneself or by earlier physicians. Celsus approved of dissection but was opposed to human vivisection and concluded that no school was wholly right.

"De Medicina" was the first complete treatise on general medicine written in flawless, elegant, and concise Latin, avoiding vulgarity and obscurity (12). This was how Celsus introduced the Latin medical terminology i.e., translated the Greek medical nomenclature into Latin, and for many centuries medical texts were written in Latin or Greek language. It is of interest that it was only in the sixteenth century that Paracelsus in Basel did not lecture in Latin but in his national German language. Today, English medical terminology is the "lingua franca" (13).

His contemporaries did not describe Celsus as a physician, and only few authors quoted him during the Middle Ages, like Isidore Bishop of Seville in the sixth century. According to F. Garrison (1), only four authors mentioned Celsus in the Middle Ages.

During the Renaissance, Celsus' work was appreciated by many physicians, not only for the knowledge

of medicine demonstrated by the author, but also for the concise and brilliant Latin language. In the text, the often used rhetoric i.e., few synonyms: *morbus*, *vittium*, *noxa*, *malum*, or the word *natura* with different meanings (14,15). During the Renaissance time, Celsus was called the "Cicero medicorum or Hippocrates latinus". More recently, Daube expressed the view that Celsus was reminiscent of Leonardo da Vinci (16).

In his treatise "De Medicina", Celsus wrote systematically and divided it into three parts. The first deals with preservation of health and how the *sanus homo* should regulate his life style to preserve it: moderate exercise, simple diet, drinking water, sleeping, sexual intercourse, and especially by the *homo imbecillus* (frail man). The second part deals with diseases that can be general or local, and the third addresses their treatment that can consist of diet (the most important also including exercise – especially walking, rest, baths, massage) use of medicaments (topical or internal), and if, necessary manual treatment (surgery) (17). It is important that Celsus also wrote on the different types of "nourishment" and divided them into three classes of foods (Book 2); the strongest were: bread, pulses, meat from large domesticated animals, large birds, big fish, honey, and cheese; the middle class: smaller birds, fish, pot herbs whose roots or bulbs were eaten; the weakest class: vegetables, fruit, olives, snails, and shellfish. He believed that spring and winter were the most salubrious seasons, while summer and autumn were more dangerous. He also argued that obese persons often suffer from acute diseases and stroke and can die suddenly. Interestingly, Celsus wrote in his preface: "*cum par scientia it utilioem, tamen medicum esse amicum quam extraneum*" (presuming their science to be equal, it is more useful to have in the physician a friend rather than a stranger) (18).

Today, Celsus is mostly known for his definition of the four cardinal signs of inflammation that he listed in the book III, page 273 of the De Medicina: *Notae vere inflammationis sunt quattuor rubor et tumor cum calore et dolore* (The signs for inflammation are four: redness, swelling, accompanied by heat and pain) (7).

There have been interminable discussions by many medical historians on whether Celsus was a physician or not; among his contemporaries, none referred to him as a physician. Later, some authors believed he was not a physician but a plagiarist or a transcriber or a translator; so some believed that he plagiarized a work by Cassius, but it was later claimed that Mentecrates was the source of Celsus' work; while other believed he translated a work of Titus Aufidius Siculus. On the other hand, some medical historians like Garrison and Spencer (3,4,7) thought he prac-

ticed medicine at least as a *pater familiae* and cured his family, friends among the nobility, and cattle. This is also confirmed by the frequent use of the empathic "ego" and even text describing that he attended a patient by night.

The present article describes what Celsus wrote on cutaneous diseases and their treatment in his *De Medicina*. It is of interest that only few dermatologists have dedicated articles to this subject, which is especially present in the fifth and sixth books of the *De Medicina* (19-21). Celsus also wrote succinctly on venerology in the sixth book.

### Skin diseases in Celsus

According to Erasmus Wilson (19), Celsus enumerates between forty and fifty cutaneous diseases in his *De Medicina*, and herein we will provide a summary of these diseases from the English translation of the treatise by Spencer.

#### Third book

In chapter 26, Celsus described a disease that the Greeks called elephantiasis, that was almost unknown in Italy but common in other countries. The skin becomes tick, studded with maculae that are at first red then become brown. The legs and feet become swollen, but it is a disease of the entire body, attacking the skin, bones, and other organs. The patient becomes feverish and dies. Celsus did not mention that this was leprosy.

#### Fifth book

In chapter 25, Celsus described erysipelas, which can be a consequence of some wounds, but sometimes also occurs spontaneously. It is dangerous when it is located on the head or neck. To cure it, we can use refrigerants, and if they do not help, a mixture of sulphur, white lead, saffron in wine can be used. If the treatment is ineffective, one can perform cauterization. It is interesting that Celsus described erysipelas as an ulcer red in color without an elevated border, and the patients as being feverish and thirsty.

In the same chapter, he wrote on gangrene, which can occur in any part of the body, and is characterized by black or livid skin covered by black pustules. The skin is insensitive; when not widespread it can require amputation.

In the chapter 27, the author explains the lesions caused by a human or animals bites (dogs, apes, snakes), followed by scorpion stings and their possible treatment. Serpent bites are to be treated with constriction above the bite and then to draining out

with a cup, or a person must suck the wound, which is safe both for the patient as and the person doing it.

#### Chapter 28

**Carbuncles.** A cluster of black or pallid pustules appear on red skin, containing a serous liquid; the skin becomes hard, the patient is somnolent and with a fever. The treatment consists of using of some caustic substances or cauterization.

**Carcinoma.** It is mostly not dangerous if it is not irritated by improvident treatment; it appears on the face, nose, lips, or breast of women and can be elevated or ulcerated. The veins around it are dilated, so the Greeks called it *Karkinos* (crab) because of the resemblance to this animal. The lesion can be painful. However, Celsus used the terms carcinoma or cancer; for tumors he also used for the terms *cacoethes*, which are curable, and *thymium*. The latter is not curable. It is very hard to distinguish these tumors. The treatment consists in cauterization or excision, but the tumor returns and the patient ultimately dies. Sometimes it has a different aspect and the Greeks called it *condylomata* (*acuminata*, not *lata*). Some tumors are ulcerations that the Greeks called *therioma*, which are black or livid with inflammation and pain and become purulent and mucous, with a foul odor and with the lesion insensitive to touch, but with a surrounding inflammation and blood, which the Greeks called phagedaena and which can spread, and both can occur in older people(1,22). Galen later described a hard tumor that he called *scirrhus*.

**Ignis sacer (holy fire).** There are two kinds: one is light red with little pustules; the second type is not elevated but larger. Today, *ignis sacer* is called erysipelas. Some ancient authors used *ignis sacer* to describe herpes zoster. A special ulcer is the *chironian ulcer* (the ulcer was present in the centaur Cheiron when hurt by Hercules), without the tendency to heal (23), being large and with hard swollen margins. It is typically located on the legs and feet and only moderately painful. Today it is known as venous ulcer.

**Ulcus.** Ulcers also can develop in winter due to the cold, particularly on the feet, toes, and hands of children, with redness, moderate pain, but great pruritus. Sometimes, pustules arise followed by an ulcer. Therapy consists of applying to the ulcer equal parts of frankincense and alum pounded together and with added wine. This is probably pernio (chilblains), as it was termed Pliny the Elder in his *Historia Naturalis* (24). Radbill believed that Celsus' description was better than that by Hippocrates (25).

**Struma.** A swelling with fever often presenting on the neck or armpits and groins and flanks. The disease has a long duration; the treatment is white hellebore,

but some use caustics. Struma was probably a swelling of the lymph nodes.

**Phyma.** An elevation with redness that becomes hard; resembles a furunculus but is rounder and larger and is more frequent in infants.

**Furunculus (boil).** A tuberculum acutum with inflammation and pain, especially when is converted to pus. The lesion is not dangerous as it opens and releases the pus. More significant problems cause a *carbunculus* that is hard and red and is black or livid at the top. Sometimes it is surrounded by are pustules. The treatment consists of the use of caustics or cauterization.

**Favus or kerion** (Kerion in Greek means "like a honeycomb") is like a furunculus but greater and with more pain. There are two kinds. One is more frequent on the scapula; the second on the head and hair, with a few holes from exuding a greenish-white purulent fluid in consistency like honey olive oil. The treatment consists in the application of a dry fig and linseed boiled in honey or plaster or emollients.

**Verrucae.** Some ulcers are wart-like. Acrochordons are hard and somewhat rough under the skin, not larger of a bean. At the basis they are thin, and broad at the apex. They are often numerous, especially in children, and may disappear suddenly. Another kind is called *thymion*, i.e., a little wart that projects over the surface. It is narrow near the skin and wider above. The top has the color of the thyme flower; it bleed readily. It has the size of an Egyptian bean. It can occur on the palms or soles of the feet. The worst kind is located on the genitals, which is a type called *myrmecia* that are less prominent and harder than the *thymion* and are painful. They bleed less and are small, not larger than a lupin. Rarely, it can disappear spontaneously, and it is hard to eradicate.

**Pustulae.** This is what the Greeks called exanthema. Celsus described different species of pustules; they arise frequently in spring. Some are red, others are the color of the skin, livid or pallid and sometimes black. underneath them is a humor. When they rupture and ulcerate the Greeks called them *phlyctae-nae*. The causes may be cold, heat, or some drugs. *Phlyzacion* are harder pustule, whitish in color and acuminate (probably acne) and appear in the young on the face or rarely on the body. Some *pustulae* are painful and not larger than a broad bean. They often develop in the night (the Greek called them *epynictis*), are black or livid in color and surrounded by an inflammation and that manifests mostly on the extremities; these are the worst type. Today these terms are no longer in use. The therapy consists in a diet.

**Scabies.** Characterized by harder and dense skin,

it is reddish and rough and accompanied by persistent itching. It presents pustules, some dry and some moist. The disease can vanish but often returns. When the pruritus is more severe, the Greeks called this kind of scabies *agri*a (fierce). The treatment consists of zinc oxide, saffron, and, in some cases, the use of a mixture of sulphur, liquid pitch, and oil which is then heated. Celsus believed that scabies was not contagious.

**Impetigo.** There are four types: the first resembles scabies with redness and hardness of the skin, but has more ulcerations and scales and pustules or vesicles. The disease tends to recur in certain seasons. The second kind is worse, resembling a pimple or papule and redder (*scabies rubra*). Small scales detach from the skin, as well as numerous erosions, spreading rapidly. The third is even more severe than the second: the skin is ticker and harder, with more swelling and cracks on the surface. The scales are black (*impetigo nigra*). The fourth type is incurable; its color is whitish and with white or yellowish scales. Bleeding sometimes occurs when they are removed. There are also changes on the nails. All kinds are often present on the hands and feet. The treatment is similar to that for scabies. Interestingly, Celsus did not write on psora, leprosy, or psoriasis. Galen first introduced the term psoriasis, not for what we call psoriasis vulgaris today, but for seborrhoeic dermatitis. Later authors like Plenck (26) believed that some types of impetigo (the second, third, or fourth) were describing psoriasis.

Celsus next described papulae (buds), that can be of two types: one can consist of small pustules, red in color and slightly eroded and spreading in a circle; the second, which the Greeks called *agri*a (savage), is characterized by greater roughness and lesser rounding. This shows that Celsus did not differentiate *papulae* and *pustulae*, although the latter contains a fluid.

**Vitiligo.** More ugly than dangerous. There are three types. *Alphos*, white in color, rough and not continuous, so that it resembles drops that have been sprinkled about. They can enlarge over time. The second type was called *melas* is similar but black in color; *Leuce*, like *alphos*, is white, and the hairs are also white. All types can spread, some quickly others slowly. The therapy consists in lentil meals with Sulphur and frankincense pounded together with vinegar.

Verbov believed that *leuce* indicated vitiligo, while *alphos* may have been be guttate psoriasis.

## Sixth book

After describing diseases that generally affect the body in this book Celsus, wrote about the diseases that affects only a particular region or organ (skin, eyes, ears, genitals).



**Chapter 1.** The author writes on hairs falling off the head. Sometimes they fall after a general disease, but it often happens in older people, and there is no possible cure. A remedy for some cases of hair falling out is frequent shaving or ladanum mixed with oil.

**Chapter 2.** Porrigo. A disease of the scalp or rarely of the beard or eyebrows; small scales can be seen between the hairs. Sometimes there can be also ulcers that emanate a foul odor; the treatment consists in combing or application of soda in vinegar or ladanum in myrtle oil and wine. Today we call this pityriasis capillitii and dermatitis seborreica. Later authors called it *crusta lactea* in children, and it may be a type of *kerion celsi* with *crustae* and matted hair (25).

**Chapter 3.** Sycosis. It is a disease the Greeks called sycosis because the ulceration or elevation resembled a fig; it is round and develops on the hair of the head or on the beard. There are two types: one ulceration is indurated and circular, mostly localized on the beard, while the second is irregular, moist, mostly localized on the scalp and with a fetid discharge. Today, this is called tinea capitis or barbae.

**Chapter 4.** Areae. bald maculae can be of two types: one is alopecia (from the Greek word that means fox mange), also called *area Celsi* or *alopecia Celsi*, which appears on the scalp and on the beard. The hairs become thin and fall out, the skin becomes smooth and bald, and the area can spread quickly or slowly. The disease is more common in adults. The second area is called *ophiasis* by the Greeks (from *ophis* – snake) and spread serpiginously. Typically, it is located on the back of the head (occipitally) and is more common in children. Treatments include scarifying the area with a scalpel, using turpentine, or daily shaving.

**Chapter 5.** Here, Celsus described *vari*, *lentitculus*, and *ephelides*. *Vari* is our acne vulgaris, which is frequently localized on the face; *ephelides* are freckles. These minor problems can be treated, but is a waste of time for the medical practitioner, but other than for women. *Ephelides* is a roughness and indurated discoloration mostly on the face or on the other parts of the body. For treatment, one can use resin with honey. A rare type is redder, called *semion* by the Greeks.

**Pediculosis.** They can sometimes develop between the eyelashes; the Greeks called it *phitiriasis*. Pliny also described it on the head and clothes.

At the end of the sixth book, Celsus described *the partes obscenae* (obscene parts) and succinctly described their diseases: description of balanitis, phymosis, and paraphymosis, in the treatment of which

he suggested repositioning and incision if necessary; urethritis (*profusio seminis*), that can be purulent (gonorrhea) and in some cases urine retention. He also described ulcers on the penis, but we cannot know if this was referring was *ulcus durum*, *ulcus molle*, or cancer. He also explained condylomata, which are *tuberculi* or tumors due to inflammation, and the therapy consists in application of lentil meal with a little honey; however, in long-lasting cases it is also possible to use caustics. Most likely, on the penis or in the anal region these lesions were *condylomata acuminata* but not *lata*. *Simile tubercula* that can bleed the Greeks called hemorrhoids. In women, they also appear in the vulva.

In books VII and VIII, Celsus describes the treatment of diseases by manipulation or by surgery. It is of interest that Celsus, in book VII, wrote on *varix* – varices – describing their aspects and their treatment, which was surgical: cauterization or surgery. He described in details the procedure and the instruments to use for umbilical hernia and inguinal lithotomy, surgery for cataracts, and even plastic surgery for reconstruction of the nose, lips, and ears (27).

## CONCLUSION

From everything we have described above, it is clear that Celsus was a very cultured and learned man, who wrote in elegant and excellent Latin and masterfully described the all of the medical knowledge of his time. Reading his *De Medicina*, we can obtain a wealth of information on the Greek and Roman physicians in Antiquity as well as on their ideas about the causes of disease. He also wrote on conditions and diseases of the skin and introduced the Latin medical terminology which is still sometimes used today. He described some plastic operations in detail. The work of Celsus is entirely free from superstitions, although he describes a few folk remedies. Naturally, today his treatments are obsolete in the majority of the cases. The description of the skin (*cutis*) and its diseases is rather succinct, and it is sometimes not easy to recognize some entities, because their characteristic lesions (*efflorescences*) are not well-differentiated and confounding. There is no clear division of papules, pustules, vesicles, ulcers and erosions, and others. We had to wait the work of Willan (28) at the end of the eighteenth century, who introduced the first comprehensive nomenclature of the primary lesions, that he classified in eight orders. He also introduced pictures to easily recognize them. Modern ideas about the causes of cutaneous diseases did not appear earlier than the middle of the 19th century.

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