

Unit 8 - Alchemy and Herbalism in Renaissance Medicine

Reading

In Renaissance culture the universe is composed of heavenly bodies and man of organs in relation to the forces of the cosmos. The approach of medical knowledge to body care is based on the interconnection of astrology and science. During the fifteenth and sixteenth centuries, philosophy and magic are combined with empirical theories, with a new model of knowledge based on phenomenological investigation and research. Undeniable and relevant was the influence exerted by magic thought on lovers of the scientific revolution. Examples of this are the astronomer and doctor Copernicus, William Harvey, who established the mechanism of circulatory system and supported the theory that the heart is "principle of life" like the "Sun of the human microcosm", and Isaac Newton who was also influenced by alchemy. Magic and medicine, alchemy and natural sciences merge to produce original theories that captivate the interest of scholars and science men.

At the end of the 14th century, alchemy is channelled through three main streams: the project of transmutation, which was part of the Summa of Pseudo-Geber (Paolo di Taranto); also through the alchemy of the elixir, exposed in the texts attributed to Ramon Llull and Arnaldo da Villanova, which aimed to produce a more general agent of transformation, capable of promoting health and prolonging human life; and finally, with Giovanni di Rupescissa, the development of distillation procedures from organic and inorganic ingredients (alchemy of the 'fifth essence'), a line decidedly oriented towards pharmacological and therapeutic purposes, which would constitute the fundamental characteristic of the subsequent Paracelsian renewal. Alchemy was introduced in Europe by the Arabs.

"This magisterium, the healing art of the human body works with the virtues of herbs, roots, flowers, seeds, resins..." (Elucidarius, p. 202).

Thus began his Elucidarius Christopher from Paris, inscribing himself in the seventies of the fifteenth century, in a tradition of alchemical art that dates back to the thirteenth century, and which had been codified in the triple use of the elixir as an agent of human health, the preparation of precious stones and metallic transmutation.

The method of distillation spread in the world of doctors, pharmacists and aromatherapists who shared with alchemists the techniques and tools to break down organic substances into their elementary components. The use of the practice has, for the former, the objective of the composition of a refined product with loss of the so-called feces, dry residue equated to the element "earth". The alchemists, for their part, present distillation as a system for finding the raw material, in accordance with an ancient doctrine dating back to Roger Bacon. The alchemic distillation takes place in sealed jars, "in such a way that nothing is added or removed" (according to a common place present in many authors of the time), and aims to obtain, through the indefinite repetition of circulations, the real transmutation, understood as a return to the pure and primordial quinta-essentia.

The distinction between the two main fields of application of distillation, pharmacological and alchemical, stands out with absolute evidence in the Libellus de aqua ardenti written in 1440 by Michele Savonarola,



who in 15th century Italy is the most illustrious representative of doctors' interest in distillation. This interest is also found in France (Jacques Despars) and England (Gilbert Kymer).

Doctors connect Michele Savonarola's interest to other forms of therapeutic use of alchemic products.

Around the elixir and one of the main texts that founded its western tradition in the Late Middle Ages, the Pseudo-Lullian Testamentum, a part of the English alchemical research of the middle of the century was concentrated by the group of doctors and naturalists who in 1456 addressed a petition to the king in order to search through alchemy "the precious medicine that philosophers defined as the mother of all medicine", i.e. "drinking gold".

There was a growing interest in the pharmacological research that had been aroused by the widespread and recurrent plague epidemics in the 14th and 15th centuries, with various medical authors.

The theme of drinking gold became central to 15th century and Renaissance alchemical medicine. The therapeutic virtues of gold are rooted in its incorruptible metal character, symbol of perfection, in its connection with the Sun, the giver of life, and finally with the heart, also a vital source.

The therapeutic connotation of the alchemical elixir becomes an essential element for the cure, so that the "miraculous" therapeutic effects of the preparation are exalted in the treatments.

1. Paracelsus

For Philipp Theophrast Bombast von Hohenheim, known as Paracelsus (1493-1541), alchemy is a science of "transformation" including all chemical and biochemical techniques. He proposes a new theory of the human body as a chemical system whose fundamental role is played by 3 mineral elements: sulphur, mercury and salt. He argues that health can be restored through the use of substances of mineral nature, thus laying the foundations of modern pharmacology. The basis of medical science is the knowledge of nature as a mirror of man. The use of simple substances found in nature becomes essential.

In this historical phase characterized by the affirmation of reason and science, a popular herbalist culture develops that becomes a "sacrarium" of pharmacological notions. The knowledge of the properties and active principles contained in the natural substances of plants (morphine, quinine, caffeine, atropine) became important. Paracelsus put particular interest in the study of the vegetable "spagyric". In the term derived from Greek the words "separate" and "divide", "connect" and "unite" are contained. These concepts form the basis of every alchemical operation, i.e. the application of alchemy to the preparation of essences and tinctures obtained from medicinal plants.

For Paracelsus, all natural bodies are made up of three "spagyric" principles - salt, sulphur and mercury, substances obtained from the chemical analysis of bodies. They do not, however, designate common salt, sulphur and mercury, but their essences, i.e. very pure substances, on which the sensitive properties of bodies depend. The four Aristotelian elements (earth, water, air, fire) do not completely disappear in Paracelsian chemistry, but they are given a secondary role: they are defined as the "matrices" in which the principles to form the compound bodies operate. Chemistry for Paracelsus is closely related to its medical-pharmacological applications. He adopts and re-elaborates a series of magical conceptions, mostly of neoplatonic origin. He affirms, for example, that imagination can produce extraordinary effects not only in



one's own body, but also in other individuals and on natural bodies. One of the central themes of Paracelsus' thought, which will be developed by his followers, is the doctrine of signatures, for which each natural entity has been endowed by its creator with a specific visible form that is never random, but is a clue to its intended uses. According to this doctrine, which becomes an integral part of Renaissance pharmacology, the figure of a plant refers to its therapeutic use, indicated by the similarity that exists between the plant and the parts of the body that has the power to cure.

Mercury represents the vital principle; sulphur impersonates the soul and consciousness, salt the body and nature. In herbal medicine mercury is represented by ethyl alcohol, it is obtained from plants by fermentation and distillation.

The controversial medical-pharmaceutical doctrines contained in Paracelsus' works explain why very few of them were published while the author was still alive. The writing *Von den ersten dreien Principiis oder Essentiis* dates back to the period spent in Strasbourg (1526-1527), in which the doctrine of the tria principia was exposed for the first time. The *Liber de vita longa*, written around 1526, dealt with the theme of life extension and proposed a series of recipes and drugs through which it would be possible to reach the age of 140 years. The first writing Paracelsus succeeded in having published was the *Vom Holtz Guaiaco gründlicher Heylung* (Vienna, 1529), dedicated to the therapeutic use of guaiac wood (*Lignum Guajaci*), which from the beginning of the 16th century was used with varying successes to treat syphilis. Ulrich von Hutten (1488-1523) in *De guaiaci medicina et morbo gallico liber unus* (1519) praised this remedy; Paracelsus, on the contrary, contested its effectiveness, arguing also that the import of guaiac had favoured the economic interests of the great commercial houses of Augsburg, in particular those of the Fugger and Welser. The controversy that followed (1530) with the Faculty of Medicine in Leipzig, under pressure from traders, in favour of the use of guaiac wood, prevented the publication of Paracelsus' other writings on the subject.

Das Buch Paragranum dates back to 1530, which sets out the theory of the "four pillars" of true medicine, namely astronomy, philosophy, alchemy and the personal virtue of the doctor. In 1536, the *Große Wundartzney* was published in Augsburg. This work attests to extensive expertise in the treatment of external injuries and contains an extensive list of remedies. The writings of the so-called Carinthian Trilogy, written the following year, remained unpublished, one of which is dedicated to 'tartaree' diseases (i.e. diseases caused by the production of mineral concretions within the human body). Between 1922 and 1933, a 14-volume critical edition of Paracelsus' writings on medicine and natural science was published by the Leipzig medical historian Karl Sudhoff (1853-1936).

In *Das Buch Paragranum*, or *Liber quatuor columnarum artis medicae*, whose composition dates back to 1530, Paracelsus offers for the first time a compendium of his aetiological and therapeutic theories, according to which the physician must master all the sciences that constitute the pillars of medicine: "If I want to treat the foundation of medicine, I must derive the things that represent this foundation. Thus I am obliged to recognize every foundation in philosophy, astronomy and alchemy" (*Das Buch Paragranum*, ed. Sudhoff, VIII, p. 137).

To philosophy, astronomy and alchemy is added, as a fourth pillar, the personal skill of the physician, his *virtus*, which descends directly from God and is revealed to him by Nature. Through the four pillars the



physician is able to diagnose illnesses and find suitable remedies, without following the traditional humoral pathology or the doctrine of degrees (see Volume I, The Greek-Roman Science, chapters VI and XIV), but starting from the knowledge of 'external' man and 'internal' man; the correspondence found in man himself between macrocosm and microcosm, between 'internal anatomy' and 'external anatomy' indicates to the physician the way to follow.

According to Paracelsus, the disease is determined not only by the elements or moods, but also by the "star" formed in man as an ideal principle. This 'internal firmament' corresponds to the external firmament, of which the physician must know the courses to correctly diagnose a disease; a physician expert in natural phenomena (the seasons, constellations and properties of the planets) cannot make a wrong diagnosis because the 'external' is also contained in the 'internal'. He can, therefore, link to rain 'the origin of flussion, dysentery and diarrhoea' thunder and wind signal colic and torsiones (abdominal pain); tartaree diseases (tartarus) are linked to hail and lightning; female diseases to the position of the planet Venus, and so on.

However, the physician is not able to cure diseases coming directly from heaven, since this is the responsibility of the adept medicine, to which only the initiates have access. The medicus adeptus is "a pharmacist in the firmament and on behalf of the firmament acts" (ibid., p. 189). Only Nature recognizes diseases and provides prescriptions for medicines. Medicines had to be prepared on the basis of the inner body star and not on the basis of quality, degrees or moods, since both diseases and remedies derive from the inner stars. The arcana, as incorporeal substances, can be used as remedies; in fact, assuming, so to speak, an 'astral nature', they prove to be effective against illnesses.

Paracelsus' complicated medical theories, in which an ontological conception of the disease was implicit, found an eccentric integration in his doctrine of the tria principia, which marked the abandonment of traditional conceptions of matter. Sulfur (sulfur), mercury (mercurius) and salt (sal) are the principles contained in the four elements - earth, air, fire and water.

Alchemy is for Paracelsus ars spagyrica, which has the task of extracting an impalpable quinta essentia from the bodies; the quinta essentia is obtained through the distillation of metals.

For Paracelsus, therefore, alchemy provides the physician with remedies for the care of the body. Within this vision the theoretical germs developed by the next medical generation for the preparation of drugs through chemical processes are already present.

One of Paracelsus' main merits in the field of medicine is that he drew attention to a wider use of minerals in medical matter; by subjecting them to alchemical and pharmaceutical treatments, remedies were obtained for the treatment of diseases which he baptized arcana: arcanum lapidis philosophorum, which, like the philosopher's stone with metals, 'died' the body and restored its health; arcanum mercurii vitae, which regenerated the body and gave it new energy; mercurius essentificatus, antimony oxychloride, derived from the sublimation of mercuric chloride with antimony, and finally tinctura, which, like elixiria and quintae essentiae, acted on the human body as a universal drug.

Another group of drugs was represented by the magisteria, mainly obtained from metals but also from precious stones, pearls, corals, plants, wine or blood; treated with gold compounds, the magisteria gave the drinkable aurum, a drug to which subsequent doctors would attribute great therapeutic efficacy.



Project number: 2018-1-ES01-KA203-050606

In Book IX of *De signatura rerum* (composed in 1537 but published only in 1584), entitled *De signatura rerum naturalium*, he set out his theory of signs, according to which three types of signatura could be distinguished, namely that impressed by man, that deriving from archei and finally that produced by the stars.

The latter was visible in the physiognomy of an individual, which derived from both the 'external' and the 'internal' star of man. Even more important than physionomia was, however, according to Paracelsus, the signatura of plants, minerals and animals, because through him the doctor could establish the age and therapeutic efficacy of a certain plant. The spiritus resided in the root, and remained even after the death of the plant; only when the root was destroyed did the plant lose its healing powers. From the signum signatum of a plant, therefore, the doctor could deduce the therapeutic properties and use them to treat the corresponding diseases.

With Paracelsus, the era of 'iatrochimica' or 'chemiatria' (in ancient times also 'chimiatria') began, a medical doctrine that on the one hand interpreted physiological processes in chemical terms, and on the other hand proposed the use of chemical remedies for the treatment of diseases.

In 1566 the *Onomasticon Theophrasti Paracelsi* by Adam von Bodenstein (1528-1577) appeared in German; this book had numerous successive editions; in 1574 Michiel Schütz (Toxites) (1515-1581) published *Onomastica II primum philosophicum, medicum synonymum ex variis vulgaribus linguis alterum Theophr. Paracelsis ... vocum ... explicatio*, which were mainly intended to explain the medical-chemiatic neologisms coined by Paracelsus.

Among the doctors who at the end of the 16th century referred to Paracelsus' ideas was Leonhard Thurneysser zum Thurn (1530-1597). Author of the *Archidoxa* (1569), and the *Quinta Essentia* (1570) - which also described the preparation of chemiatic remedies. Called to Berlin by John George (1571-1598), prince elector of Brandenburg, he took up a medical practice based on the diagnosis of urine, through a distillation process of his own invention, which made it possible to analyze urine samples sent even from distant patients. Convinced supporter in the medical practice of "chemiatria", he challenged the doctrines of the Galenians. Not unlike Paracelsus, he based the preparation of remedies on three principles that he deduced from the analysis of the three kingdoms of Nature to develop their therapeutic properties; according to Thurneysser, based on the principle to which they were associated, the drugs were divided into three groups: (1) salt, powder, tartar, crocus and magnet, with saline properties; (2) essences, waters, liquores, as well as mercurium philosophorum, associated with mercury; (3) tinctures, oils, balsams and magisteria, mumia and spiritus, subject to the principle of sulphur. Thurneysser's therapeutic doctrines were also based on a astrology.

A strong opponent of these theories was Greifswald's medical professor, Franziskus Joël (1508-1579), who bitterly contested the combination of magic and chemiatory, although in his *Opera medica* (1616-1631) he described numerous recipes for the preparation of paracelsian chemiatory remedies.

An attempt to reconcile Paracelsian principles with 16th century medicine was made by the humanist physician Johann Guintervon Andernach (1505 ca.-1574) in *De medicina veteri et nova tum cognoscenda tum faciunda commentarii duo*, published in Basel in 1571. With Paracelsus - who recognized chemiatory as *ars medica*, Guintervon praised the chemiatory remedies, however, he vehemently attacked their use by



charlatans and tradesmen; the drugs obtained by fire proved, in fact, to be effective in the treatment of serious diseases, but could have been extremely harmful if used without the proper knowledge.

In Johann Guinter von Andernach, the contrast between 'galenists' and 'paracelsists' that would dominate the medical-pharmaceutical literature of the following period emerged for the first time. A humanist physician, he remained bound to the medical doctrines of the Ancients, and yet his pharmacopoeia was borrowed from Paracelsus, of whom he took up, for example, some recipes to prepare compounds of antimony and mercury, as well as a aurum potable. Undoubtedly, Johann Guinter, by virtue of his authority as professor of medicine in Paris, made a decisive contribution to the diffusion of Paracelsus' ideas in both Germany and France.

Tommaso Erasto (1524-1583) criticized the chemiatory preparations of antimony and mercury, claiming that the fire used in the preparation of medicines had more destructive than therapeutic properties. The doctrine of the three principles and the medical and pharmacological theories of Paracelsus were constantly opposed to the Galenic-Aristotelian medicine and natural science, which - according to Erastesus - were the most reliable foundations of medical practice. He therefore denied the existence of occult forces and also rejected the use of astrology in medicine.

2. Libavius

Criticism of chemiatory was also expressed by the physician Andreas Libau or Libavius (1555-1616). Despite the title, his *Alchemia*, published in Frankfurt am Main in 1579 (in a second edition in 1606 the title was transformed into *Alchymia*), turns out to be a fundamental treatise on general chemistry, which Libau had followed in 1615 with two works of commentary and explanation, the *Syntagma selectorum* and the *Appendix necessaria*.

In the *Alchemia* Libau was intended to offer a panorama of contemporary chemistry to both gymnasium students and medical students, and - in addition to the Aristotelian doctrines - referred to the three principles of Paracelsus, although giving to them a secondary importance. The work is divided into two sections, the first dedicated to *Encheria*, or science of manipulation (the Greek *encheiría*, - *cheír*, hand - is properly 'practice', 'manipulation'), the second to chemical processes. The *Encheria* consisted in the mastery of fire and instruments as an indispensable foundation for the work of the chemist, and in the first section there are therefore detailed instructions on individual manipulations, as well as on temperature regulation. The second book of the work, entitled *Chemia*, deals instead with the preparation of magisteria, extracts and "compound species", and provides accurate and precise instructions for the preparation of various chemical substances. The "compound species" corresponded to the so-called chemical *composita* and had a greater therapeutic efficacy than the galenic *composita*.

Libau's main merit is undoubtedly to have provided an encyclopedic compendium of the chemical knowledge of his time and to have been one of the first to associate mineralogy, chemistry and applied chemistry in the same work.

At the beginning of the 17th century, the number of medical and pharmacopoeia works aimed at spreading chemiatory and defending it against the 'Galenics' as representatives of the ancient pharmacopoeia restored by the humanists in its original purity multiplied; among the doctors of the 'second generation' chemiatics



emerged the figure of Oswald Croll (1560-1608), whose main work can be considered the *Basilica chymica*, a treatise on chymistry whose *editio princeps* was published posthumously in Frankfurt in 1609. Croll set up a real chymiatric laboratory in Prague, professing his adherence to the doctrines of Paracelsus and chymistry, describing in detail his theories and methods. Taking up the doctrine of the three principles, he said that the true doctor-philosopher should have a thorough and exhaustive knowledge of the 'external' macrocosm in order to understand the microcosm 'inside' man. The four classical elements represented, so to speak, the pillars of the external world, but Croll did not intend them as material constituents of the Universe, but as cosmic regions or matrices, composed of spirit and matter. The elements, in turn, were formed by the three principles - salt, sulfur and mercury - which thus controlled the chemical and physiological processes of the macrocosm. The second part of the *Basilica chymica* was dedicated to chymiatric practice and in it Croll presented numerous chemical prescriptions for the preparation of 'paracelsian' drugs. Unlike the previous works dedicated to chymistry, the *Basilica* of Croll gave clear indications on the raw materials of the preparations without, however, specifying the quantities, which would have made it possible to follow homogeneous and certain methods in the preparation of individual medicines.

Also in 1609, Croll published in Frankfurt am Main the treatise *De signaturis internis rerum seu de vera et viva anatomia majoris et minoris mundi*, in which - taking up the theories of the signatory formulated by Paracelsus and the Italian Giambattista Della Porta (1535 ca.-1615), whose work *Phytognomonica* had already been published in 1588 - showed by means of numerous examples how plants, animals or minerals revealed their therapeutic properties through their external signatura. According to the principle that 'the like cures the like', diseases of certain parts of the body could be cured by plants whose name contained the name of that part of the body (e.g., *Pulmonaria officinalis* for the treatment of lung diseases), or which presented a morphological similarity to the part itself (e.g., 'shrimp eyes' for the treatment of eye diseases).

Also in the 20th century, with the spread of the so-called alternative medicines, there was a revival of interest in this work.

Professor of Chymistry in 1609 at the University of Marburg (after having been a professor of mathematics and medicine) Johannes Hartmann (1568-1627) was firmly determined to give the new science a consolidated place alongside the other university disciplines. An eminently practical man, he rejected any mixture of chemistry and astrological or hermetic doctrines. According to his motto, *dogma non iuro in Paracelsi aut scita Galeni, vera utriusque placent, false utriusque iacent!* (I do not swear allegiance neither to the dogmas of Paracelsus nor to the principles of Galen, the truths of both find recognition, the falsehoods go unnoticed), Hartmann placed chymistry entirely at the service of medicine and his teaching in the *Laboratorium chymicum publicum* included, in addition to theoretical lessons, a practical part related to the techniques of drug preparation. Students learned how to prepare opium, laudanum opiatum and the so-called 'English drinking gold'. The exercises were put on record and the students' observations, supplemented with their explanations, were noted down in a notebook. Hartmann gave great importance to the accuracy of the observation, even demanding night vigils from the students in the case of particularly long and complex work; at the same time he imposed the obligation not to divulge the methods of preparing chymiatric drugs to the outside world. The laboratory was financed both from the proceeds of the sale of chymiatric preparations and from the fees paid by the students.



Project number: 2018-1-ES01-KA203-050606

His only independent work, the *Praxis chymiatrica* - published posthumously in 1633 - consisted of a collection of recipes, which also described the methods of preparation of the drugs. In a brief introduction, Hartmann illustrated his conception of a 'chemical' therapy that had to be chosen according to the precise diagnosis by the doctor, who, starting from his knowledge of chemiatry, prepared the remedies (*specifica* and *euporista*) and administered them to the patient.

With the *Basilica Chymica* of Croll and the *Praxis chymiatrica* of Hartmann, doctors and pharmacists of the 17th century had at their disposal two fundamental treatises on chemiatry, which, in addition to providing a guide to the preparation of chemiatic drugs, also contained hermetic concepts and Paracelsian medical theories, and led some authors to attempt a conciliation between 'galenic' and 'hermetic' medicine.

The conciliation between 'Galenicians' and 'Paracelsians' happened thanks to Jakob Zwinger (1569-1610), professor of medicine in Basel, author of the book *Principiorum chymicorum examen ad generalem Hippocratis, Galeni, caeterorumque Graecorum ad Arabum consensum institutum*. He, while referring to Aristotelian medicine, invited the doctors of his generation to recognize the 'new' principles of mercury, zinc and salt as constitutive elements of matter. The quotations taken from the works of Hippocrates, Aristotle and Avicenna reveal the humanist formation of the author, but the references to Paracelsus and chemiatry also indicate Zwinger's desire to reconcile traditional medicine with Paracelsian medicine. He tried to demonstrate how the Ancients already knew the therapeutic virtues of antimony, mercury and sulfur; Paracelsus' merit would have been to reintroduce chemical remedies into contemporary pharmacopoeia. The work did not exert a significant influence, however Jakob Zwinger can be counted among the authors who, in the contrast between humanistic-galenic medicine and Paracelsus' medicine, decidedly took a position in favor of chemotherapy.

A similar interest in the natural sciences emerges in *De chymicorum cum Aristotelicis et Galenicis consensu ac dissensu liber* (1619) by Daniel Sennert (1572-1637), who, as a physician and chemist (he was responsible for the introduction of the study of chemistry in universities), felt the duty to purge science from Paracelsus' theories.

Against Sennert, the chemist Gregorius Martini took a position in an operetta, *Commentatiuncula in librum qui inscribitur de chymicorum cum Aristotelicis et Galenicis consensu ac dissensu caput XI*, published in 1621 in Frankfurt am Oder by Friedrich Hartmann. He intended to demonstrate that Paracelsus' medicine was not in contradiction with Galenic medicine, as Sennert had claimed, stating that certain assertions of Paracelsus should be understood in part as allegories or similarities. Martini therefore tried to trace the three principles of Paracelsus back to the four Aristotelian elements - focusing mainly on sulphates - and devoted a detailed treatment to vitriol, to which he attributed some properties of sulphur. It is noteworthy that in Martini's work the notion of 'phlogiston' already appeared, which he identified with a "incombustible substance that is released" from certain compounds.

A last attempt, however vain, to hinder the spread of Paracelsian medicine was made by Hermann Conring (1606-1681), erudite professor of medicine, in *De Hermetica Aegyptiorum vetera et Paracelsicorum nova medicina*, published in Helmstedt in 1648.



Vainly, according to Conring, the ancient pharmaceutical art was attacked by the followers of Paracelsus, so that chemiatry itself could not be defined as a true science; Paracelsus' doctrines were, in his opinion, without foundation.

However, in order to fully understand the controversy between Galenics and Paracelsus, it is necessary to remember the great importance of metals and their pharmaceutical preparations in materia medica in the 17th century; alongside mercury, bismuth and lead, to which healing properties were attributed, antimony in particular assumed a central role in the therapy of doctors and pharmacists of the time.

Towards the beginning of the 16th century, doctors had begun to show a particular interest in antimony (stibium). In addition to the therapeutic effectiveness of its derivatives, used as diaphoretics, laxatives and emetics, its property of separating gold, the 'king of metals', from impurities and waste was already known at the time. Antimony was known mainly as antimonium (antimony trisulphide) and as oleum antimonii (antimony trichloride), from which mercurius vitae (a mixture of oxide and antimony oxychloride) was obtained; there were also flores antimonii, compounds of antimony anhydride.

It was Paracelsus who decisively drew the attention of doctors to the antimony compounds and attributed great therapeutic value to this metal. In the German fragments present in the five books of *De vita longa*, published in Strasbourg in 1574 by Georg Forberger (c.1543 ca.-1604), Paracelsus observed in the chapter *De magisterio antimonii*: "Just as antimony purifies gold, in the same form and manner it also purifies the body. For it contains the essentia, which leaves nothing impure in what is pure. And there is no expert of all the archdioxic or spagyric texts that can ever come to know in depth the strength and virtues of antimony" (*De vita longa*, ed. Sudhoff, III, p. 306).

The therapeutic use of antimony was developed by Adrian Symenicht (or Seumenicht) von Mynsicht (1603 ca.-1638), in whose *Thesaurus et armamentarium medico-chymicum*, which appeared in Hamburg in 1631, provided the recipe for emetic tartar for the first time. For some time it was known that antimony and its compounds were soluble in wine and the drink obtained from it exalted the valuable purgative properties of antimony compounds, but inaccuracies in the dosage always caused complications. The tartarus emeticus, on the other hand, being able to be administered in exact doses, became one of the preferred chemiatic drugs and soon found acceptance also in pharmacopoeia.

Wanting to give an overall evaluation of the influence exerted by Paracelsus' works and his "new medicine" between the end of the 16th and the beginning of the 17th century, it can be said that Paracelsus' medical doctrines were accepted in the canon of traditional medicine. Despite considerable resistance from the traditionalists, the majority of 17th century doctors accepted the ontological conception of the disease and the three principles. On the other hand, there continued to be a strong rejection of the magical doctrines present in Paracelsus' work, especially among the exponents of Catholic and Protestant orthodoxy. However, it was precisely these doctrines - which were linked to the neoplatonic currents - that aroused the interest of the heterodox circles, which often saw Paracelsus as the initiator of a 'third Reformation'. The fascination exercised by Paracelsus the magician and alchemist survived much longer than his outdated medical doctrines since the discovery of the 'great circulation' by William Harvey and the emergence of inductive methods in the natural sciences in medicine.



References

- Clarck J. R., Marsilio Ficino among the alchemists, *The Classical Bulletin*, 59, 1983, pp. 50-54.
- Chmet G., *Medicina officinale: dal Medioevo al Rinascimento*, *Gabriellachmet.it*, nov 2019.
- Conforti M., Carlino A., Clericuzio A., *Interpretare e curare*, Ed. Carocci, 2013, pp 1-435.
- Corbett J., *Catalogue des manuscrits alchimiques latins*, Bruxelles, Secrétariat Administratif de l'U.A.I., 1939-1951, 2.
- Crisciani C., Pereira M., *L'Alchimia fra Medioevo e Rinascimento*, in *Storia della Scienza* Treccani, 2001.
- Crisciani C., *From The Laboratory To The Library. Alchemy According To Guglielmo Fabri*, in: *Proceedings of the Conference 'Renaissance Natural Philosophy And The Disciplines'*, Notre Dame (Ind.), University of Notre Dame, 1993.
- Crisciani C., Pereira M., *L'arte del sole e della luna. Alchimia e filosofia nel medioevo*, Spoleto, Centro Italiano di Studi sull'alto Medioevo, 1996.
- Debus Allen G., *The Chemical Philosophy. Paracelsian Science And Medicine In The Sixteenth And Seventeenth Centuries*, New York, Science History Publications, 1977, 2.
- Debus, Allen G., *Chemistry, Alchemy And The New Philosophy, 1550-1700. Studies In The History Of Science And Medicine*, London, Variorum reprints, 1987.
- Kocher P. *Paracelsan Medicine in England: the thirty years (1570-1600)*, *Journal of the History of Medicine and Allied Sciences*, Fall 1947; 2,4; *Periodical Archives Online*, p.451.
- Masini F. (a cura di), *Paracelso, Paragrano, Laterza, Roma-Bari*, 1973.
- Multhauf R, *The significance of distillation in Renaissance Medical Chemistry*, *Bulletin of the History of Medicine*, Jan 1, 1956; 30, *Periodicals Archive Online*, p.329.
- Pagel W., *Paracelsus. An Introduction to Philosophical Medicine in The Era of The Renaissance*, 2. rev. ed., Basel-New York, Karger, 1982 (1. ed.: 1958; trad. it.: *Paracelso. Un'introduzione alla medicina filosofica nell'età del Rinascimento*, Milano, Il Saggiatore, 1989).
- Pereira M., *'Mater Medicinarum'. La tradizione dell'elixir nella medicina del XV secolo*, "Annali del dipartimento di filosofia - Università di Firenze", 9, 1993, pp. 3-31.
- Rattansi P., Clericuzio A., *Alchemy and Chemistry in the 16th and 17th centuries*, Kluwer Academic publishers, *International archives of the History of ideas*, 1994, p 208.
- Tosatti, Bianca S., *Il manoscritto veneziano. Un manuale di pittura e altre arti (miniatura, incisione, vetri, vetrate e ceramiche) di medicina, farmacopea e alchimia del Quattrocento*, Milano, Carmas, 1991.
- Trevor-Roper, Hugh R., *The Court Physician And Paracelsism*, in: *Medicine at the Courts of Europe, 1500-1837*, edited by Vivian Nutton, London-New York, Routledge, 1990, pp. 79-94
- Vasoli C., *La cultura dei secoli XIV-XVI*, in: *Atti del primo Convegno internazionale di ricognizione delle fonti per la storia della scienza italiana: i secoli XIV-XVI*, a cura di Carlo Maccagni, Firenze, Barbera, 1967.
- Webster 1975: Webster, Charles, *The Great Instauration. Science, Medicine, And Reform, 1626-1660*, London, Duckworth, 1975.
- Webster, Charles, *Alchemical And Paracelsian Medicine*, in: *Health, Medicine And Mortality In The Sixteenth Century*, ed. by Charles Webster, Cambridge-New York, Cambridge University Press, 1979, pp. 301-334.
- Webster, Charles, *From Paracelsus to Newton. Magic And The Making Of Modern Science*, Cambridge, Cambridge University Press, 1982.
- Zambelli Paola, *L'ambigua natura della magia*, *Il Saggiatore*, 1991, pp 1-345.
- Zanier, Giancarlo, *La medicina paracelsiana in Italia. Aspetti di un'accoglienza particolare*, "Rivista di storia della filosofia", 40, 4, 1985, pp. 627-653.

