

ALCHEMY AND THE TEACHINGS OF IBN SINA

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ABSTRACT

This article provides information on the use of chemical compounds in the preparation of medicines in the works of the great oriental scientist Abu Ali ibn Sino. Abu Ali ibn Sino, a renowned thinker of the East who made a great contribution to the development of chemistry, was one of the founders of medicine, pharmacology and alchemy. Abu Ali al-Hussein ibn Sino was born in 980 in the village of Afshana, near Bukhara. Ibn Sino studied at a Muslim school in Bukhara and then supplemented his education by reading books independently. In particular, he was fond of medicine. As an alchemist, Ibn Sino was familiar with the use of various chemicals for treatment and categorically denied that ordinary metals could be converted to gold and silver.

Keywords: Ibn Sino (Avicenna), chemistry, medicine, mineral, metal transmutation, water, gold, silver, mercury, sulfur.

INTRODUCTION, LITERATURE REVIEW AND DISCUSSION

Abu Ali Ibn Sino, a renowned thinker of the East who made a great contribution to the development of chemistry, was one of the founders of medicine, pharmacology and alchemy. Abu Ali al-Hussein ibn Sino was born in 980 in the village of Afshana, near Bukhara. Ibn Sino studied at a Muslim school in Bukhara and then supplemented his education by reading books independently. In particular, he was fond of medicine. At the age of 21 he moved to Urgenj, the capital of Khorezm. There was an academy here then, which united many scientists of different specialties. The head of the academy was the famous mathematician al-Biruni. Ibn-Sino became an active employee of the Academy and wrote here his famous works "Canon of Medical Science" and "The Book of Healing Means". His interests were mainly in logic, arithmetic, algebra and natural sciences, especially medicine. In this field, he also paid attention to chemistry. [2.61]

Ibn Sino was involved in almost all the sciences of his time. Of the 242 works that have survived to our time, 80 are devoted to philosophy, 43 to medicine, 19 to logic, 26 to psychology, 23 to natural sciences, 7 to astronomy, 1 to music, 2 to chemistry, 9 to morality, 4 to literature and 8 to scientific work with other scientists. [1.5] In his works on chemistry, the scientist revealed the regularities of formation of various minerals, metals, poisons, dyes, pigments and others in nature. "Canon of Medical Science" is a work of encyclopedic nature, covering all aspects of medical science of that time, which contains chemistry, including therapeutic agents and their effect on the body.

Ibn-Sino is a supporter and follower of Aristotle's teaching about elements and qualities. Among the huge number of medicines described in the "Canon" (over 750), there are many minerals (metals, their oxides and salts, as well as acids and alkalis), mainly - various organic (plant and animal) substances. [2.61] Ibn Sino introduced the concepts of "production time" and "shelf life" into pharmaceuticals for the first time. If we do not look at the term, it is said that the medicinal properties of the drug are burned. In Ibn Sino's opinion, the best medicine is

considered to be a newly prepared one. The reason is that over time, the medicinal properties of the drug are decreasing. On this basis, the expiration date of pharmaceuticals is currently determined and prescribed. The shelf life of medicinal products changes under the influence of surface factors (light, heat, air oxygen), the interaction of a medicinal product with each other or as a result of the substance's influence on the composition of the medicinal material, based on changes in the structure of the molecule and therapeutic effect. [3.24] According to this doctrine, the composition of chemical reagents is currently changing under the influence of surface factors (light, heat, air oxygen), on the basis of which their shelf life is determined.

The scientist paid attention to the composition of air, water. In his works, he explains the relationship between water purity and health, the emergence of various diseases from exposure to harmful air components, the causes of poor-quality water and the appearance of polluted air. In his work "Canon of Medicine", he interpreted the properties of water using good examples. The best water is the water of springs, but not of all springs, but flowing on the pure ground, in the soil which is not dominated by any foreign properties and qualities, or on the stony ground, which is better preserved from rotting by earth rot. But the earth composed of pure clay is better than stony ground. Good water is not of every pure spring, but of every spring that flows at the same time, and not of every current spring, but of a spring that flows and is open to the sun and to the winds - this is one of the qualities through which running water gains its dignity. As for standing water, sometimes it, being open, acquires bad properties which it does not have, being in a lowland and being hidden from the sun. Also, not all flowing water open to the sun is good, but only that which has a clay bed. Ibn Sino believes that weighing is one of the best ways to know water quality: lighter water is better in most cases. Weight is sometimes measured, sometimes recognized as follows: two rags or two pieces of cotton of the same weight wet with water of different qualities, then dried and weighed. The water with which the lighter cotton has been soaked is better. Distilling and distilling is one way of correcting bad water, and if this is not possible, boiling. Boiling water speeds up the deposition of other substances in it, and provides a system of ways to clean dirty water. [1.50] When you drink non-pure water, it is recommended that you add acidic substances to the water. The reason is that, in our opinion, this acidic medium has been shown to be harmful to bacteria. According to Ibn Sina, the worst water is water that flows from lead pipes. Modern science has proved that water and its components cause the formation of toxic lead compounds, soluble in water when interacting with the surface of the lead pipe, and give rise to various chemical changes. This penetrates into the body and damages enzyme systems, resulting in poisoning the body to such an extent that it dies.

Ibn Sino wrote: the ice and snow are pure, and the water, dissolving them, will have beneficial properties for drinking; but when it melts, which become fresh water, will be harmful to nervously ill people. He considers good water, that water which falls out of summer rain clouds. Rain drops from clouds that come with strong winds are not clean, they are dirty. [1.52]

Ibn Sino, along with flora and fauna, used a lot of inorganic substances in the preparation of medicines. As an example, the following metals, minerals: gold, silver, aluminum, lead, iron, steel, mercury, aluminum paint, kibrit (sulfur), zarnih (auripigment), borax (borax and soda), magnesium (manganese ore), ammonium nitrate. Ibn Sino studied the properties of these substances and gave important information related to inorganic chemistry. Explaining the features of mercury, he writes that it will be obtained from cinnabar, connected to sulfur, and vice versa. It was at that time that Ibn Sino established that mercury and its vapours were particularly toxic. He also taught organic substances to produce copper acetate from acetic acid and copper.

"The Book of Healing Products is an encyclopedia devoted mainly to natural science, chemistry and medicine. Ibn Sino reveals the basics of Aristotle's teachings on the origin of metals and minerals on earth. He also supports the view of Jobir Ibn Hayan, who focuses on the metals of mercury and sulphur. However, unlike Jobir and Ar-Razi, Ibn Sino denies the transmutation of metals (the way metals are turned into gold) and condemns the opinion of gold prospectors that simple metals (copper, iron) can be turned into noble metals (gold, silver). He wrote: "Alchemists claim," he writes, "that they seem to be able to make real transformations of substances. However, they can only produce perfect imitations by painting the red metal white so that it looks like silver, or by painting it yellow so that it looks like gold. I don't deny that with such changes in the appearance of metals, such a degree of similarity can be achieved that even very experienced people can be deceived. However, the possibility of destroying specific differences between metals, or reporting specific properties of another metal to the metal, has never been clear to me. On the contrary, I find it impossible, for there is no way of transforming one metal into another" [2.61].

Ibn Sino's chemical views are quite fully expressed in his book of healing remedies. In the question of classification of substances he adheres to the views of ar-Razi, but mineral bodies are divided into 4 classes:

1. Stones
2. Sulfur
3. Molten substance
4. Salts. [3.46] Soon Ibn Sino's work began to be regarded as one of the main benefits for physicians until the 18th century. Aristotle's follower as an alchemist, Ibn Sino, after learning about the use of various chemical preparations for treatment, discovered that transmutation of metals may be impossible. [2.69] Ibn Sino's great scientific success in medicine and pharmacology led to the fact that he was well acquainted with the chemical composition of his organic and inorganic compounds in a wide range, and also knew the methods of their interaction, well fulfilled the secret of preparing a large number of drugs.

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