

## THE CHARACTERISTICS OF DIABETES IN THE TEACHINGS OF IBN SINO

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### ✓ Resume

Abu Ali ibn Sino made a great contribution to the study of diabetes. Diabetes was well known to ancient doctors, who, based on anamnesis, external examination, palpation and pulse diagnostics, were able to identify pathological changes in the body, learn the essence of changes in "temperament" (nature), make a diagnosis and draw conclusions about the appointment of the necessary treatment to correct the patient's "temperament". Abu Ali ibn Sino first identified the characteristics of the "temperament" of a healthy person, then its changes in diseases, as well as the "temperament" of the drugs prescribed for its treatment. The "temperament" of a healthy person was considered neutral. Ibn Sino noted that in diabetes, the "temperament" changes to the "cold" side.

Diabetes mellitus remains one of the most pressing problems of modern medicine today. Treatment of diabetes mellitus with synthetic and chemically developed drugs, unfortunately, is not considered effective in achieving significant therapeutic results, sufficiently long-term remission or cure of the disease. In addition, numerous side effects, the development of body resistance, and the presence of many low-quality drugs reduce the effectiveness of treatment.

Based on the studies conducted by a number of scientists and the results of a study of 359 published scientific articles, they discuss the mechanisms of their action in type 2 diabetes. The authors note that in most studies, the main symptoms of the disease, such as insulin resistance and glucose tolerance, are considered as a result of insufficiency or dysfunction of the  $\beta$ -cells of the islets of Langerhans. In addition, when using the most popular new-generation antidiabetic drugs with different mechanisms of hypoglycemic action, manifestations of dysfunction of many organs have been identified and their effect on blood glucose levels has been described. For example, in type 2 diabetes, glucose control with metformin is achieved through the liver and intestine. Other hypoglycemic agents affect glucose metabolism by acting on the pancreas (sulfonylureas, GLP-1 receptor agonists, meglitinides), skeletal muscle (insulin), adipose tissue (thiazolidinediones), kidneys (SGLT2 inhibitors), and brain (pramlintide, bromocriptine). Proper nutrition, physical activity, and other lifestyle components also have a beneficial effect on blood glucose regulation.

A study of the possible side effects of various hypoglycemic drugs, recorded in scientific studies, showed that most synthetic hypoglycemic drugs cause a number of complications. These include hypoglycemia (hypoglycemic shock), the development

of diabetic ketoacidosis, an increased risk of bone fractures, the inability to absorb drugs, increased body weight, increased risk of heart failure, heart attacks, strokes and even cancer. It was noted that the use of individual drugs is unacceptable in patients with chronic renal and hepatic insufficiency, diseases of the nervous and respiratory systems, elderly patients and drivers of vehicles.

Abu Ali ibn Sino made a great contribution to the study of diabetes. Diabetes was also well known to ancient doctors, who, based on anamnesis, external examination, palpation and pulse diagnostics, were able to identify pathological changes in the body, learn the essence of changes in the "temperament" (nature), make a diagnosis and draw conclusions about the appointment of the necessary treatment to correct the patient's "temperament". Abu Ali ibn Sina first identified the characteristics of the "temperament" of a healthy person, then its changes in diseases, as well as the "temperament" of the drugs prescribed for its treatment. The "temperament" of a healthy person was considered neutral.

Ibn Sina noted that in diabetes mellitus, the "temperament" changes to the "cold" side. In modern terms, this means a shift in the pH level of the body's fluid environment to acidosis. According to Ibn Sina, under the influence of products with a "cold nature", significant changes occur in the "temperament" of the internal environment of the organism to the "cold", that is, acidic side. In this regard, Ibn Sina forbade the prescription of acidic (sour) foods and drinks for diabetes, since these products aggravate the shift of the patients' "temperament" to the "cold" diabetogenic side.

Treatment of diabetes mellitus, despite the achievements of modern endocrinology, genetics and pharmacology, still remains an extremely complex task, and in some cases finding a satisfactory solution poses quite a problem. Therefore, it is urgent to search for new approaches to the treatment of diabetes, as well as to develop new drugs, in particular, low-toxic herbal remedies. Properly selected herbal preparations, along with their sugar-lowering effect and control of the diabetogenesis process, have an active hepatoprotective, anti-inflammatory, antihypoxic, antioxidant and immunostimulating effect.

In this area, simple and complex natural antidiabetic agents recommended by Ibn Sina for the treatment of diabetes are of particular interest, the therapeutic effect of which is mainly aimed at stopping the diabetogenesis process. The results of a scientific analysis of Ibn Sina's teachings on dietary therapy and herbal treatment for diabetes showed that Ibn Sina first of all emphasized diet correction, and only then spoke about drug treatment. In the treatment of severe forms of diabetes, Ibn Sino used 11 complex drugs consisting of three or more components, along with simple herbal, animal and mineral antidiabetic drugs.

Based on the above, taking into account the current problems of modern diabetology and pharmacology, it is of great importance to identify effective and safe

antidiabetic plants with metabolism-correcting, blood sugar-lowering, hypolipidemic, angioprotective, hepatoprotective, antioxidant effects.

Thus, we can conclude that many antidiabetic drugs today differ in effectiveness, ease of use, additional effects and even the cost of drugs. Therefore, diabetes therapy should be individualized, taking into account the characteristics of the body, the needs and preferences of each patient, the goals of treatment and safety. For effective treatment and prevention of diabetes, in our opinion, it is necessary to combine official and complementary medicine methods, in particular herbal medicines.

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