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BIOTECHNOLOGY OF CULTIVATING PLANTS CONTAINING SUGAR DIABETES

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Abstract

Information is provided on medicinal plants used in diabetes mellitus, their morphophysiological properties, distribution, composition, and cultivation technology.

Keywords: Berberin, Dolchin, Onion (Trigonella foenum-graecum L.), Ginger (Zingiber offil).

Introduction

Currently, 540 million people worldwide are diagnosed with diabetes. Between 1980 and 2014, the number of patients with this disease increased from 108 million to 422 million. According to the International Diabetes Federation, this figure may reach 643 million people by 2030 and 783 million people by 2045. Especially dangerous is that one in two patients doesn't even know they have diabetes. The prevalence rate of diabetes is quite high in low and middle-income countries. 7% of Uzbekistan's population suffers from first and second-degree diabetes.

Although many antidiabetic drugs have been developed today, most of them have been developed in pharmaceutical laboratories under the influence of chemical and biochemical agents, which does not mean that these drugs have a serious

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negative effect and allow for complete recovery from the disease. Continuous use of chemically produced drugs has led to a high mortality rate in patients with diabetes mellitus.

Results and their analysis: Diabetes mellitus, as well as increased blood pressure, is one of the most global problems of the 21st century. Therefore, the search for the most potential therapeutic agents of medicinal plants for the treatment of diseases such as diabetes mellitus and high blood pressure is of great importance. In order to study medicinal plants used by Canadian botanists in the treatment of diabetes and hypertension, botanical samples were collected in accordance with standard ethnobotanical methods, the medicinal plants were processed and identified.[2]

Berberin, originally known as jasmine, is a plant belonging to the group of isoquinoline alkaloids, and studies have shown that Berberin, taken at a dose of 500 mg 2-3 times a day, has the ability to effectively control blood glucose levels and lipid metabolism, similar to metformin.[25]

Cinnamon, (Cinnamomum Cassia Blume) - a tree-like species of the laurel family, predominantly. From the plant found in South China, Vietnam, Laos, Sri Lanka, Indonesia (Java, Sumatra) and Latin America, Dr. Richard Anderson discovered in his laboratory that it can increase insulin sensitivity in people with type 2 diabetes and reduce blood glucose and cholesterol levels [26]

Dr. Richard Anderson Laboratory by Diabetes Action Kurkumin (Turmeric) is used as a dietary supplement in folk medicine as a pain reliever and for the prevention of inflammation. When studied by researchers, it became clear that kurkumin has the ability to increase insulin sensitivity and is 400 times more potent than Metformin, which is used in the treatment of type 2 diabetes, especially diabetes mellitus. [28]

Onion bulb (Trigonella foenum-graecum L.) is a medicinal plant, initially found in India and North Africa; it is also currently widespread in North Africa, Europe, South Asia, Argentina, and Australia. Onion thistle (Trigonella foenum-graecum

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L.) is widely used mainly in India, today it accounts for 80% of the world's production of medicinal plants and food products. It has been used since ancient times as a food spice, as well as for many therapeutic properties. The onion bulb (Trigonella foenum-graecum L.) plant reaches a height of 60 cm, its seeds are golden-yellow rhomboid-shaped and are widely used in the food industry, while its leaves and stems are used as medicinal plants. [29]

In modern research, bulbs (Trigonella foenum-graecum L.) It has been proven that it helps regulate blood glucose levels and reduce total cholesterol levels, as well as increase the level of α-beneficial (HDL) cholesterol [30].

Flax (Linum usitatiisimum) is the oldest fibrous plant, mainly found in cold temperate regions. Flax (Linum usitatiisimum) is cultivated as a fiber, seed, and ornamental plant. On a global scale, Russia leads in the export of flax (Linum usitatiisimum). Also, Belgium is a leader in the cultivation of high-quality flax (Linum usitatiisimum) fiber. [31].

Flax (Linum usitatiisimum) fiber medicinal plant researchers have found that consumption of flax fiber has significantly improved blood glucose levels [.32]

Ginger (Zingiber officinale Roscoe) is widely known worldwide as a medicinal and spicy plant. Its wide range of effects is explained by its chemical composition, which is rich in phenolic compounds, terpenes, polysaccharides, lipids, organic acids, and raw fibers.

When using ginger (Zingiber officinale Roscoe) as a medicinal plant, the presence of gingerols and shogaols, as well as phenolic compounds, is explained. Collected studies have shown that ginger can be used as an antioxidant, anti-inflammatory, antimicrobial, anti-cancer, neuroprotective, cardiovascular, respiratory, anti-obesity, antidiabetic, anti-nausea, and antiemetic.[33]

Although the plant Ginger (Zingiber officinale Roscoe) and its extracts are one of the most important plants for improving human health, the bioavailability and pharmacokinetics of Ginger (Zingiber officinale Roscoe) have not been sufficiently studied in biological experiments. Ginger (Zingiber officinale

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Roscoeham) products made from it can cause side effects in response to drug interactions when used simultaneously with other medications, therefore it requires special attention when using this plant, especially in pregnant women. [35]

Conclusion

Inulin-containing plants are very beneficial for health, as they help improve intestinal microflora, regulate blood sugar levels, and lower cholesterol levels.
The rich composition of ginger (Zingiber officinale Roscoe) with inulin, vitamins, and minerals ensures its significant benefits in managing diabetes. Inulin in the plant ensures its control without increasing blood glucose levels. At the same time, the antioxidant properties of Jerusalem artichoke and its effect on improving intestinal microflora serve as an effective remedy in the fight against diabetes. Therefore, it is recommended to include Jerusalem artichoke in the diet of patients with diabetes mellitus, which contributes to the improvement of overall health.

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