



A Review On The Best Indian Herbs For Managing Diabetes

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ABSTRACT:-

Diabetes mellitus is characterized by hyperglycaemia, altered metabolism of protein[amino acids], fats, and carbohydrates, and chronic complications affecting the kidneys, eyes, heart, and nervous system. Numerous plants from around the world have been explored for their potential to prevent diabetes. This review focuses on key medicinal herbs with hypoglycaemic properties, drawing on robust clinical and laboratory evidence. Additionally, it includes several medicinal herbs recommended by Iranian traditional medicine for treating diabetes.

Beyond medicinal plants with established antidiabetic effects and associated health benefits, a list of herbal remedies used to manage diabetes has been compiled. These include *Phyllanthus amarus*, *Pterocarpus marsupium*, *Tinospora cordifolia*, *Trigonella foenum graecum*, *Momordica charantia*, *Ocimum sanctum*, *Eugenia jambolana*, *Allium sativum*, and *Withania*. Oxidative damage is a contributing factor to the development and progression of diabetes; therefore, an antidiabetic drug with antioxidant properties would be particularly advantageous. Consequently, this review also includes information about the antioxidant properties of specific medicinal herbs. The findings can serve as a framework for future research aimed at isolating, purifying, and characterizing the bioactive antidiabetic compounds found in these plants.

Keywords:-Diabetes mellitus, Medicinal Plants, Antidiabetic

Introduction:-

Diabetes mellitus is a syndrome marked by altered protein, carbohydrate, and lipid metabolism as well as hyperglycemia. The most prevalent chronic metabolic disease, diabetes mellitus, is typified by elevated glucose levels brought on by either a relative or absolute lack of insulin. The most prevalent chronic metabolic disease, diabetes mellitus, is defined by elevated blood glucose levels brought on by either a relative or absolute lack of insulin. Globally, diabetes mellitus is becoming a more serious issue that has a significant financial cost and policy implications for health care. Up to 90% of people in poor nations use traditional medicine based on plants and their products for primary healthcare, according to the World Health Organization (WHO). The World Health Organization has compiled a list of 21,000 plants that are utilized medicinally worldwide. India is home to 2,500 of these species. There have been reports of about 800 different plants having antidiabetic potential. Many bioactive compounds derived from plants have demonstrated their potential for use as active principles in the potential treatment of diabetes.

Indian medicinal plants that are commonly used and have been shown to be useful against diabetes are Babul (*Acacia arabica*), church steeples (*Agrimonia eupatoria*), onion (*Allium cepa*), garlic (*Allium sativum*), ghrita kumara (*Aloe vera*), neem (*Azadirachta indica*), ash gourd (*Benincasa hispida*), Beetroot (*Beta vulgaris*), bitter apple (*Citrullus colocynthis*), ivy gourd (*Coccinia indica*), eucalyptus (*Eucalyptus globules*), banyan tree (*Ficus benghalensis*), gurmaar (*Gymnema sylvestre*), gurhal (*Hibiscus rosa-sinensis*), sweet potato (*Ipomoea batatas*), purging Nut (*Jatropha curcas*), mango (*Mangifera indica*), karela (*Momordica charantia*), tulsii (*Ocimum sanctum*), bisasar (*Pterocarpus marsupium*), anar (*Punica granatum*), jamun (*Syzygium cumini*), giloy (*Tinospora cordifolia*), and methi (*Trigonella foenum-graecum*). These plants are all abundant in phytochemicals.

The effectiveness of several significant plants utilized in India's traditional medical system to treat type 2 diabetes is discussed in this review.

Types of Diabetes:-

There are three main types of diabetes

1. Type 1 Diabetes

- **Causes:** This is an autoimmune condition where the immune system mistakenly attacks and destroys insulin-producing cells in the pancreas
- **Onset:** It usually develops in childhood or adolescence but can occur at any age.
- **Treatment:** People with Type 1 diabetes require lifelong insulin therapy (either via injections or an insulin pump), as their bodies cannot produce insulin.

2.Type 2 Diabetes

- **Causes:**This occurs when the body becomes resistant to insulin or does not produce enough insulin. It is often associated with lifestyle factors such as being overweight, sedentary, and having an unhealthy diet, though genetics also play a role.
- **Onset:**Type 2 diabetes is more common in adults, especially those over 45, but increasing numbers of younger people are being diagnosed due to rising rates of obesity.
- **Treatment:**Management typically involves lifestyle changes (healthy diet, regular exercise), oral medications, and in some cases, insulin therapy.

3.Gestational Diabetes

- **Causes:**This form of diabetes develops during pregnancy and usually resolves after childbirth, though it increases the risk of developing Type 2 diabetes later in life.
- **Onset:**It occurs during pregnancy, typically in the second or third trimester.
- **Treatment:**Treatment includes monitoring blood sugar levels, following a healthy eating plan, regular physical activity, and sometimes insulin if necessary

Common Symptoms of Diabetes:-

- Frequent urination
- Increased thirst
- Unexplained weight loss
- Fatigue
- Blurred vision
- Slow healing of wounds
- Fatigue
- Wounds Numbness or tingling in the hands or feet (more common in Type 2 diabetes)

Complications:-

If left uncontrolled, diabetes can lead to serious complications, including:

- Heart disease
- Stroke
- Kidney failure
- Nerve damage (neuropathy)
- Vision loss or blindness
- Foot problems that can lead to amputation

8 Herbs to Manage Diabetes from an Ayurvedic Perspective



Ayurvedic Herbal Remedies To Manage Diabetes:-

Diabetes is become a common health problem in the world, and many people now prioritize managing their diabetes. While traditional medicine gives a range of choices for treating diabetes, the ancient Indian medical system known as Ayurveda offers a comprehensive approach. Ayurveda focuses on

balancing the body, mind, and spirit to achieve overall well-being. The Ayurvedic treatment for Type II Diabetes involves the use of herbal remedies that can help control blood glucose levels. Some of the popular herbs used in diabetes treatment in Ayurveda include:

1. Bitter Gourd (Karela):-



- **Scientific Name:-**Momordica charantia
- **Common Name:-**Bitter Gourd
- **Synonym:-**Momordica indica
- **Family:-**Cucurbitaceae
- **Biological Source:-**The fruit is a common vegetable. Bitter gourd is cultivated in India, Vietnam, China, and other African and American countries and is a popular plant used for treating diabetes and related conditions.
- **Chemical Constituents:-**bitter melon which are responsible for the antidiabetic effects are triterpene, proteid, steroid, alkaloid, inorganic, lipid, and phenolic compounds
- **Uses:-**Controls blood sugar. Bitter gourd is best known for its ability to control and lower blood sugar levels.

There is a connection between bitter melon and reduced blood sugar. This is because the bitter melon contains substances that function similarly to insulin, assisting in the uptake of glucose by cells for energy. It facilitates better insulin secretion and utilization, which helps manage diabetes. Drinking bitter gourd juice first thing in the morning on an empty stomach has many advantages. Another way to incorporate bitter gourd into your diet is to add it to salads or curries.

2. Cinnamon(Dalchini):-



- **Scientific Name:-**Cinnamomum verum
- **Common Name:-**Dalchini
- **Synonym:-**Cinnamon bark
- **Family:-** Laurels
- **Biological Source:-**Cinnamomum zeylanicum tree, which is native to Sri Lanka and the Malabar Coast of India. The bark of this tree is the main part used to make the spice.
- **Chemical Constituents:-**Cinnamon contains a variety of chemical compounds, including polyphenols, volatile oils, and other ingredients
- **Uses:-**antioxidant, anti-inflammatory, antidiabetic, antimicrobial, anticancer, lipid-lowering, and cardiovascular-disease-lowering compound.

Cinnamon may help lower blood sugar by imitating the effects of insulin, helping to move sugar from the bloodstream and into your cells. It improves insulin sensitivity and reduces fasting blood sugar levels. You can consume half a teaspoon of cinnamon powder mixed with warm water or sprinkle it on your meals to reap its benefits. Cinnamon is not a substitute for blood sugar monitoring, a healthful diet, or diabetes medications.

Cinnamon may also reduce inflammation and help the liver store excess glucose as glycogen.

3. Fenugreek (Methi):-



- **Scientific Name:-**Trigonella foenum-graecum
- **Common Name:-**Methi
- **Synonym:-**Greek clover
- **Family:-**Fabaceae family
- **Biological Source:-**Dried seeds of Trigonella foenum
- **Chemical Constituents:-**Fenugreek contains about 35% alkaloids, mainly trigonelline
- **Uses:-**improving insulin sensitivity and lowering blood sugar level

Fenugreek seeds have hypoglycemic properties and are high in soluble fiber. Two tablespoons of fenugreek seeds should be soaked in water throughout the entire night. The next morning, when you're not hungry, drink the water. You can also include fenugreek seeds in your cooking or consume fenugreek powder mixed with warm water. The seeds may also help improve how the body uses sugar and increases the amount of insulin released. Fenugreek or Methi seeds have high fiber content and it regulates blood sugar levels.

4. Indian Gooseberry (Amla):-



- **Scientific Name:-**Phyllanthus emblica
- **Common Name:-**Amla
- **Synonym:-**Malacca tree
- **Family:-**Phyllanthaceae
- **Biological Source:-**A tree native to Southeast Asia's tropical regions is called Phyllanthus emblica. The fruit that the tree bears is referred to as amla, or Indian gooseberry.
- **Chemical Constituents:-**Minerals, Vitamins, Amino acids, Tannins, Flavonoids
- **Uses:-**Amla is a traditional remedy that may help keep blood sugar at a steady level and prevent spikes after meals.

The Indian gooseberry is an abundant source of vitamin C and antioxidants. It enhances pancreatic function and aids in blood sugar regulation. Drinking amla juice or incorporating it into your diet can help you control your diabetes.

Blood sugar lowering: Amla's high soluble fiber content inhibits the body's absorption of sugar, hence lowering blood sugar rises. Additionally, amla

might encourage the production of insulin by cells, which would lower blood sugar.

5. Holy Basil (Tulsi):-



- **Scientific Name:-**Ocimum tenuiflorum
- **Common Name:-**Tulsi
- **Synonym:-**Ocimum sanctum
- **Family:-**Lamiaceae
- **Biological Source:-**tulsi is the leaves, seeds, and whole plant of the Ocimum species
- **Chemical Constituents:-**linalol, eugenol, methyl chavicol, methyl cinnamate, linolen, ocimene, pinene, cineol, anethol, estragole, thymol, citral, and camphor.
- **Uses:-**Holy basil, also known as tulsi, is a herb that's native to Indian and known to be a significant part of Ayurvedic medicines. They could be used in managing diabetes and blood sugar too.

Holy basil leaves have anti-diabetic properties and help lower blood sugar levels. Chew a few basil leaves daily on an empty stomach or drink basil tea regularly to control diabetes. Holy basil oil might act as an antioxidant.

6. Turmeric (Haldi):-



- **Scientific Name:-**Curcuma longa
- **Common Name:-**haldi
- **Synonym:-**curcumin, curcuma
- **Family:-**ginger family Zingiberaceae
- **Biological Source:-**Turmeric comes from the Curcuma longa plant, a member of the ginger family (Zingiberaceae).
- **Chemical Constituents:-**phytoconstituents found in Curcuma are phenols, flavonoids, alkaloids, terpenoids, tannins, saponins, steroids, glycosides
- **Uses:-**Blood sugar management: Turmeric may help lower blood sugar levels, glycosylated hemoglobin (HbA1c), and improve insulin sensitivity.

Turmeric contains a compound called curcumin, which has anti-inflammatory and blood sugar-lowering properties. Including turmeric in your cooking or consuming turmeric powder mixed with warm milk can be beneficial for diabetes management.

7. *Gymnema Sylvestre* (Gurmar):



- **Scientific Name:**-*Gymnema sylvestre*
- **Common Name:**-Gurmar
- **Synonym:**-*Marsdenia sylvestris*
- **Family:**-Dogbanes
- **Biological Source:**-*Gymnema sylvestre* (GS), a woody, climbing plant of the Asclepiadaceae family is distributed in India, Malaysia, Sri Lanka, Japan, Vietnam, Indonesia, tropical Africa, and South Western region of the people's republic of China
- **Chemical Constituents:**-gymnemic acid, tartaric acid, gurmarin, calcium oxalate, glucose, stigmasterol, betaine, and choline.
- **Uses:**-it may help lower blood sugar levels in people with types 1 and 2 diabetes.

As the "sugar destroyer," *Gymnema sylvestre* helps lessen cravings for sweets. It enhances the synthesis and use of insulin as well. Diabetes can be managed with the help of consuming *Gymnema Sylvestre* tea or supplement form. Your ability to resist sugar cravings and control elevated blood sugar levels may be enhanced by *Gymnema sylvestre*. It's possible that the herb can help treat diabetes as well. Because it reduces the desire for sugar, *Gymnema*, also known as gurmar, is one of the principal herbs used to treat diabetes.

8. Neem:-



- **Scientific Name:**-*Azadirachta indica*
- **Common Name:**-Nim tree, Indian lilac, Margosa tree, and Miracle tree
- **Synonym:**-margosa, neem
- **Family:**-mahogany family, Meliaceae
- **Biological Source:**-In tropical and semitropical areas, such as India, Bangladesh, Pakistan, and Nepal, neem trees grow quickly.
- **Chemical Constituents:**-azadirachtin and the others are nimbolinin, nimbin, nimbidin, nimbidol, sodium nimbinate, gedunin, salannin, and quercetin.
- **Uses:**-Combining neem with diabetic drugs may result in dangerously low blood sugar levels. Keep a watchful eye on your blood sugar.

Neem leaves assist control blood sugar levels and have blood-purifying qualities. To manage diabetes, chew a few neem leaves every day or sip neem tea frequently. Blood sugar levels may be lowered with neem. Combining neem with diabetic drugs may result in dangerously low blood sugar levels. Keep an eye on your blood sugar. Beneficial in the treatment of diabetes because they enhance the body's ability to regulate insulin.

Prevention and Management:-

- **Type 1 Diabetes** Cannot be prevented, but early diagnosis and treatment are crucial.
- **Type 2 Diabetes** prevention focuses on healthy lifestyle choices, such as maintaining a balanced diet, staying active, controlling weight, and avoiding smoking.

- **Monitoring** Good diabetes management requires monitoring blood sugar levels, taking prescription drugs as directed, and visiting a doctor on a regular basis.

The Future of Herbal Medications for Diabetes Mellitus:-

Numerous herbal medicines are used, and new indigenous drugs are constantly being incorporated into conventional medicine. Approximately 80% of the population in developing countries, especially in rural areas, uses alternative medicine to treat illness. The growing demand for products with natural ingredients had led to a revival of the herbal medicine industry in developed nations. Therefore, it's critical to differentiate between herbal medications prescribed by a doctor and over-the-counter herbal therapies. As the prevalence of diabetes mellitus rises, it represents a major health risk for people everywhere. It has lately come to light that plant-based medications with anti-diabetic efficacy surpass that of oral hypoglycemic pharmaceuticals used in established treatment. Anti-diabetic plants have recently come to the forefront of scientific interest. There is a chance it could also help with the development of a better oral medication for treating diabetes

Conclusion:-

Although these herbs have the potential to help manage diabetes, it is best to use them carefully and under a doctor's supervision. More scientific research is needed to validate the dosages, side effects, and long-term safety of herbs, as they may interact with medicines. Medicinal herbs may supplement conventional treatments but should not be used in place of them as part of a holistic treatment plan. To manage diabetes in a way that is specific to them, people must collaborate with their healthcare team.