

# Review on Polyhedral Formulation and Anti diabetic Herbal Drugs Used for Diabetes

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**Abstract:** This harmful disease is found in all parts of the world and is becoming a serious threat to mankind health. It is caused by the deficiency or ineffective production of insulin by pancreas which results in increase or decrease in concentration of glucose in the blood. There are lots of chemical agents available to control and treat diabetic patients, but total recovery from diabetes has not been reported upto this date. Alternative to these synthetic agents, many herbal plants with hypoglycemic properties are known from across the world. The World Health Organization (WHO) has listed 21,000 plants, which are used for medicinal purpose around the World. A list of medicinal Plants with proven Antidiabetic and related beneficial effects and of herbal drugs used in treatment of diabetes is compile.

**Keywords:** Diabetes, Herbal Plants, Glucose, Insulin, Blood

**Introduction:** Diabetes mellitus is a systemic metabolic disease characterised by hyperglycemia, hyperlipidemia, hyperaminoacidemia and ketouria it leads to decrease in insulin, secretion and insulin action. Currently therapies for diabetes include insulin and various antidiabetic agents such as sulfonylureas, biguanides. In developing countries products are expensive and not easily accessible. Diabetes is a heterogenous metabolic disorder characterised by altered carbohydrate, lipid and protein metabolism which cause hyperglycemia resulting from insufficient insulin secretion, insulin action or both. It is one of the refractory diseases identified by Indian Council of Medical Research for which an alternative medicine is need for treatment. India has today become the capital of the world with over 20 million diabetes and this number is likely to increase to 57 million by 2025. A number of medicinal plants, traditionally used for over 1000 years named Rasayana are present in herbal preparation of Indian traditional health care system. The current review focuses on herbal drug preparation and plants used in treatment of diabetes mellitus.

## How do herbs work?

For most herbs, the specific ingredient that causes a therapeutic effect is not known. Whole herbs contain many ingredients, and it is likely that they work together to produce the desired medicinal effect. The type of environment (climate, bugs, and soil, quality) in which a plant grew will affect its components, as will how and when it was harvested and processed.

## What is herbal medicine Good for?

Herbal drug treat many conditions such as Asthma, eczema, premenstrual syndrome, rheumatid arthritis, migraine, menopausal symptoms, chronic fatigue, irritable bowel syndrome. Herbal preparations are best to consult with your doctor or an herbalist before self treating. Some common herbs and their uses are discussed below. Please see our monographs on individual herbs for detailed descriptions of uses as well as risks, effects, side effects, and potential interactions.

## Herbal drugs with Antidiabetic Properties

1. Trigonella foenum graecum (Fenugreek)
2. Aloe vera and Aloe barbadensis
3. Mangifera Indica (Mango)
4. Tinospora cordifolia (Guduchi)
5. Acacia Arabica (Babul)
6. Allium cepa (onion)
7. Allium sativum (garlic)
8. Momordica charantia (bitter gourd)

### 1. Trigonella foenum graecum( Fenugreek)

It found all over India and the fenugreek seeds are usually used as one of the major constituents of Indian spices. 4-Hydroxyleucine, a novel amino acid from fenugreek seeds increased glucose stimulated insulin release by isolated islet cells in both rats and human. Oral administration of 2 and 8 g/kg of plant extract produced dose dependent decrease in blood glucose level in both normal as well as diabetic rats.



## 2. Aloe Vera and aloe barbadensis

Aloe ,a popular house plant has long history as a multipurpose folk remedy.the plant can be separated into two basic products gel and latex .aloe vera gel in the leaf pulp .commonly referred to as aloe juice is a better yellow exudate from the pericyclic tubule just beneath the outer skin of the leaves.extract of aloe gum effectively increase glucose tolerance in both normal and diabetic rats.this action of aloe vera and its bitter principle is through stimulation and synthesis and release of insulin from pancreatic beta cells.



## 2. Magnifera indica ( Mango)

The leaves of this plant are used as an antidiabetic agent in Nigerian folk medicine , although when aqueous extract given orally did not alter blood glucose level in either normoglycemic or strptozotocin induced diabetic rats.



#### 4. *Tinospora Cordifolia* (Guduchi)

It is a large, glabrous, deciduous climbing shrub belonging to the family menispermaceae. It is widely distributed throughout India and commonly known as guduchi. Oral administration of the extract of *Tinospora cordifolia* roots for 6 weeks resulted in a significant reduction in blood and urine glucose and in lipids in serum and tissue in aloxan diabetic rats.



#### 5. *Acacia Arabica* (Babul)

It is found all over India mainly in wild habitat. The plant extract acts as an antidiabetic agent by acting as a secretagogue to release insulin. Powdered seeds of *Acacia Arabica* when administered (2, 3 and 4 g/kg body weight) to normal rabbit induced hypoglycemic effect by initiating release of insulin from pancreatic beta cells.



#### 6. *Allium cepa* (Onion)

Various ether soluble fraction as well as insoluble fraction of dried onion powder show antidiabetic activity in diabetic rabbit. *Allium cepa* is also known to have antioxidant and hypolipidemic activity. Administration of sulfur containing amino acid from *Allium cepa*



### Mechanism of action of Herbal Antidiabetic

The antidiabetic activity of herbs depends upon variety of mechanism .the mechanism of action of herbal antidiabetic could be grouped as-

1. Inhibition in renal glucose reabsorption
2. Stimulation of insulin secretion from beta cells of islets and inhibition of insulin degradative process.
3. Reduction in insulin resistance.
4. Regenerating and repairing pancreatic beta cells.
5. Providing certain necessary elements like calcium, zinc, magnesium, and copper for beta-cells.
6. Increasing the size and number of cells in the islets of Langerhans.
7. Stimulation of insulin secretion
8. Stimulation of glycogenesis and hepatic glycolysis.
9. Protective effect on the destruction of the beta-cells
10. Improvement in digestion along with reduction in sugar and urea.
11. Prevention of pathological conversion of starch to glucose.
12. Cortisol lowering activities.
13. Inhibition of alpha amylase
14. Inhibition of beta-galactosidase and alpha glucosidase

### Conclusion

Herbal therapy for diabetes has been followed all over the world successfully. Herbs are used to manage Type I and type II and their complication for this ,therapies developed along the principles of western medicine are often limited in efficacy ,carry the risk of adverse effects ,and are often too costly especially for developing world .above mentioned plants have been considered for their possible hypoglycemic effect and researcher have carried out some preliminary investigation .scientific validation of several Indian plant species has proved the efficacy of the botanical in reducing the sugar level could be considered as of possible therapeutic value .Thus many different plants have been used individually or in formulations for treatment of diabetes.

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