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## A review on herbal antidiabetic drugs

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### ABSTRACT

Diabetes, a state of improperly regulated homeostasis of carbohydrate and lipid metabolism is one of the major health problem in recent time. Traditional Medicines derived from medicinal plants are used by about 70% of the world's population. This review focuses on Indian Herbal drugs used and provide a list of medicinal herb used in ayurveda as antidiabetic and also of marketed preparations for prevention of diabetes mellitus, especially in India. Some of herbal drugs with proven antidiabetic and related beneficial effects used in treatment of diabetes are as follows *Dioscorea opposita*, *Gymnema sylvestre*, *Momordica charantia*, *Syzygium cumini*, *Azadirachta Indica*, *Pterocarpus marsupium*, *Asparagus racemosus*, *Boerhavia diffusa*, *Tinospora cardifolia*, *Swertia chirata*, *Phyllanthus amarus*, *Berberis aristata*, *Aloe vera*, *Commiphora wightii*, *shilajeet*, *Piper nigrum*, *Ocimum sanctum*, *Curcuma longa*.

**Key words:** Ayurveda, antidiabetic, herbal, traditional.

### INTRODUCTION

Allopathic drugs used for the treatment of diabetes have their own side effect & adverse effect like hypoglycaemia, nausea, vomiting, hyponatremia, flatulence, diarrhoea or constipation, alcohol flush, headache, weight gain, lactic acidosis, pernicious anaemia, dyspepsia, dizziness, joint pain. So instead of allopathic drugs, herbal drugs are a great choice which is having more or less no side effect & adverse effects (Kokar and Mantha, 1998). Ethno botanical information identified about 800 Indian plants which may have antidiabetic potential (Gupta et al, 1986) All the herbs formulation were procured from local, authentic herbs supplier shops, specialized in sale of medicinal plants & run by the Ayurvedic specialist as OTC Ayurvedic medicines. Though complementary & alternative medicine (CAM) treatments are popular, scientific evidence support their application to diabetes care is scare (Tripathi K.D, 2007). Previous CAM diabetes research has generally focused on single modalities but CAM practitioners more commonly prescribed complex, multi dietary intervention. Ayurvedic interventions may benefits patients with higher base line HbA1c value, warranting further research (Yadav et al, 2002).

#### *Dioscorea opposita* (Yam)



Yam is the common name for some species in the genus *Dioscorea* (family Dioscoreaceae) (Ansari, 2005-2006). Chinese yam is native to China. The Chinese yam plant is somewhat smaller than the African, with the vines about 3 meters (10 feet) long. It is tolerant to frost and can be grown in much cooler conditions than other yams. Yam products generally have a lower glycaemic index than potato products, which means that they will provide a more

sustained form of energy, and give better protection against obesity and diabetes.

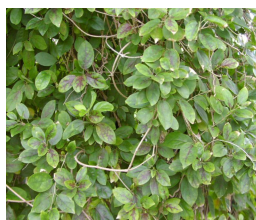
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**Table 1** Medicinal herb used in ayurveda having antidiabetic activity.

S.N.	Vernacular name	Botanical name	Family	Parts used
1.	Kutas	<i>Pterocarpus marsupium</i>	Leguminaceae	Dried juice of plant
2.	Arjunsal	<i>Terminelia arjuna</i>	Comberetaceae	Dried stem
3.	Gudmar	<i>Gymnema sylvestre</i>	Asclepidaceae	Dried leaves
4.	Guggul	<i>Commiphora mukul</i>	Bursaceae	Oleo gum resin incision of stem bark
5.	Adulsa	<i>Adhatoda vasica</i>	Acanthaceae	Leaves
6.	Jaswand	<i>Hibiscusrosa sinensis</i>	Malvaceae	Flower
7.	Babhul	<i>Acacia Arabica</i>	Leguminaceae	Gummy exudation of stem and bark
8.	Brahmi	<i>Bacopa monniera</i>	Scrophulariaceae	Aerial parts
9.	Nagarmotha	<i>Cyprus rotandus</i>	Cyperaceae	Rhizome
10.	Tagar	<i>Valarina wallichii</i>	Valerianaceae	Rhizome, stolen, root
11.	Chirait	<i>Sweritia chirata</i>	Gentianaceae	Entire herbs
12.	Aswagandha	<i>Withania somnifera</i>	Solanaceae	Root, leaves
13.	Gulvel	<i>Tinospora cardifolia</i>	Menispermaceae	Stem, roots
14.	Pimpli	<i>Piper longum</i>	Piperaceae	Leaves
15.	Bitter gourd	<i>Mimordica charantia</i>	Cucurbitaceae	Fresh green leaves
16.	Yasti	<i>Glycyrrhiza glabra</i>	Leguminaceae	Roots, stolen
17.	Sunth	<i>Zingiber officinalis</i>	Zingiberaceae	Rhizome
18.	Jambuphal	<i>Syzygium cumini</i>	Myrtaceae	Mature fruits, dried seeds
19.	Tulsi	<i>Ocimum sanctum</i>	Labiatae	Entire herbs
20.	Hirda	<i>Terminalia chebula</i>	Combretaceae	Fruits
21.	Behda	<i>Terminalia bellerica</i>	Combretaceae	Fruits
22.	Betel nut	<i>Areca catechu</i>	Palmitaceae	Dried ripe seeds

**Table 2** Marketed preparations for prevention of diabetes mellitus.

S. No.	Marketed formulation	Ingredients	Manufacturer
1.	Asanand	Ganasar, Arjuna, Lodhra, Karanja, Kanth, Shirish, Palash	Ayurveda Rasashala Pune.
2.	Shilajeet	Shudha shilajeet	Ayurveda Rasashala Pune.
3.	Triphala guggul	Triphala guggul	Ayurveda Rasashala Pune.
4.	Gokshuradi guggul	Gokshuradi guggul	Ayurveda Rasashala Pune.
5.	Trivang bhasma	Trivang bhasma	Ayurveda Rasashala Pune.
6.	Lohasava	Lohasava	Ayurveda Rasashala Pune.
7.	Giloyatva	Giloyatva	Ayurveda Rasashala Pune.
8.	Mamajov	Mamajov powder	Ambadas vanaushadhlaya
9.	Diabetic powder	Proprietary anti diabetic herbs	Rahul Pharmacy Gujarat.
10.	Indrajav churana	Indrajav churana	Universal Pharmacy Pune.
11.	Panvli	Karvas, Yashti, Panvelley, Gudmar, Gulvel, Kanth, Haldi, Amla	Panvelly Product, Rajkot
12.	Madhumehari	Vijaysar, Kutaj, Kulki, Methi, Shilajeet, Trivang-Nag-Suvarnamakshik bhasm	Shrivaidyanah, Jhansi.
13.	Karneem	Karela, Neem, Tulsi, Kulki, Sounth, Shudha guggul	Universal Medicament Pvt. Ltd, Nagpur.
14.	Hyponidd	Haldi, Jambuphal, Trivangbhasm, Chirait, Shilajeet, Senna, Amla, Gudmar, Kuaj, Gulvel	Charak Pharma Pvt. Ltd, Mumbai.
15.	Adcaps	Haldi, Jambuphal, Amla, Mamajov, N eem, Karela, Vijaysar, Tejbal, Gulvel Sudha, Guggl, Trivang-Nag-Suvarnamakshik bhasm, Shilajeet, Ashok, Madhunasni	Doctors Pharmaceuticals

**Gymnema sylvestre (Gurmar)**

The drugs consist of dried leaves of *Gymnema sylvestre* belonging to family- Asclepidaceae (Kokate et al, 1999). It rises up as a woody climber in tropical forests of central and southern India. So it was easy for them to use it as natural treatment for diabetes for more than two millennium Chemical constituents are gymnemic acid, inositol, hentriacontane, pentatriacontane. According to the horticultural department at Purdue University, it has been used in India for the treatment of diabetes for 2000 years. These drug constituents are useful for the control and treatment of diabetes.

**Momordica charantia (Karela, bitter gourd)**

It consists of fresh green fruits *Momordica charantia* belonging to family Cucurbitaceae. Chemical Constituents are- Chiratin (steroidal saponin) and mimordicin. *Momordica charantia* is not only a nutritious vegetable, but is also used in traditional medical practices to treat type 2 diabetes mellitus. In Southern India it is used in the dishes *pachadi* (which is considered a medicinal food for diabetics). Used in the treatment of diabetes. Other uses are stomachic, carminative, tonics, treatment of rheumatism, gout, disorder of spleen and liver.

**Syzygium cumini (jamun, jambul)**

It consists of mature fruits and dried seeds of *Syzygium cumini* belonging to family myrtaceae. Chemical Constituents are anthocyanin, delphinidine-3-gentiobioside, malvidin-3-laminaribioside and ferulic acid.

Many research studies have shown that jamun is one of the best medicines for treatment of diabetes. It is an Antidiabetic drug. Diabetics are advised to consume 1 tsp of this jamun seed powder in empty stomach early morning.

**Azadirachta indica (Neem)**

Source of neem is *Azadirachta indica* of family maliaceae. Neem leaf extracts and seeds are used as an active ingredient as an effective cure for diabetes. It has been scientifically proven after a number of tests and research by leading medical institutes,

that neem parts have high efficacy in treating the disease (Shinde and Dhalwal, 2009). Natural neem tablets are being manufactured and exported the world over for treating large number of patients. Neem leaf extracts improve the blood circulation by dilating the blood vessels and also helpful in reducing the need for hypoglycaemic drugs.

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