

Anti Diabetic Plants-Overview



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Submission: December 09, 2017; **Published:** July 12, 2018

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Introduction

Diabetes Mellitus (DM) is a leading cause of illness and death in developed countries and is epidemic in many developing and newly industrialized countries. Its macrovascular and microvascular complications are debilitating. The prevalence of diabetes in the world at all ages was estimated to be 2.8% in 2000, and it is expected to approximate 4.4% in the year 2030. The estimated global number of people of all ages and sex with diabetes in 2000 was 171 million. This is projected to increase to 366 million by 2030, with about 4 million deaths every year attributed to its complications. Recently, herbal medicines are gaining importance in the management of diabetes due to their high margin of safety. Here listed few antidiabetic plants recommended for pharmaceutical industry.

Momordica charantia

Momordica charantia (L.) family Cucurbitaceae (African cucumber) a medicinal plant used traditionally as an antidiabetic. Major active principles in *M. charantia* are sterols, triterpenes, glycosides notably momordin Ic, charantin, goglyglycosides, momordicosides and other cucurbitane glycosides, goyasaponins, the alkaloid momordicin, phenolic compounds, tannins, flavonoids, carotenoids and bioactive proteins like polypeptide p and alpha-momorcharin [1]. The oleanane-glycoside momordin Ic and cucurbitane-type triterpenoid glycosides especially charantin and polypeptide p have been shown to have hypoglycaemic activity [2]. While Harazika et al. [3] have demonstrated that momordicin a triterpene, is a potent inhibitor of glycogen synthase kinase-3, an enzyme involved in glucose homeostasis and potential target for anti-diabetic compound.

Azadirachta indica

It belongs to family meliaceae popularly known as Neem (English). It is commonly used plants in Africa traditional medicine for the management of diabetes mellitus. The hypoglycemic effect of this plant extract could be attributed to the presence of phytochemical constituents including, flavonoids, free and bound anthraquinones, tannins, terpenoids, sterols, saponins and alkaloids that have been associated

with antidiabetic activity [4]. As reported by [5], flavonoids enhance lipogenesis and glucose transport in the adipocytes hence lowering blood sugar [4]. The alkaloids promotes the regeneration of pancreas islets thereby restoring insulin secretion [4]. Tannins and saponins have also been shown to have hypoglycemic activity [6]. Anthraquinones which have earlier been reported to lower blood glucose are used also in the treatment of peripheral neuropathy [7].

Eugenia jambolana

E. jambolana (Family: Myrtaceae) is well known for its antidiabetic potential. Jambolan is rich in compounds containing anthocyanins, glucoside, ellagic acid, isoquercetin, kaemferol and myrecetin. The seeds are claimed to contain alkaloid, jambosine, and glycoside jambolin or antimellin, which halts the diastatic conversion of starch into sugar and seed extract has lowered blood pressure by 34.6% and this action is attributed to the ellagic acid content [8].

Phyllanthus emblica and *Vaccinium oxycoccus*

Quercetin is one of the flavonoids found in the fruits of *Phyllanthus emblica* and *Vaccinium oxycoccus*. quercetin has potent antihyperglycemic drug properties [9].

Citrus macroptera

Citrus macroptera Montr (family-Rutaceae) commonly called Sat Kara (wild orange). Essential oil of fruit of *Citrus* maximally showed significant reduction of fasting blood glucose and hepatic glucose levels while hepatic glycogen significantly increased when compared to diabetic control animals [10].

Cucurbit maxima

C. maxima Duch (family: Cucurbitaceae) commonly known as pumpkin. The seeds show antidiabetic, anti-hyperlipidemic lowering both total cholesterol and triglyceride and at the same time increase HDL-cholesterol in STZ induced diabetic rats [11].

Withania coagulans

Withania coagulans Dunal (family: Solanaceae) commonly known as Indian cheese Maker. The fruits exhibited

hypoglycaemic activity which is an effective and safe alternative treatment for diabetes [12].

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DOI: [10.19080/CRDOJ.2018.07.555720](https://doi.org/10.19080/CRDOJ.2018.07.555720)

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