

## EFFECT OF VIJAYSAR ON PREDIABETES CONDITION - A REVIEW

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Article Received on  
29 July 2022,

Revised on 19 August 2022,  
Accepted on 09 Sept. 2022

DOI: 10.20959/wjpr202213-25567

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### ABSTRACT

*Vijaysar* is a Indian traditional medicinal plant commonly known as *Asan* or *Bijaka*, Indian kino, related to the family Fabaceae (Leguminosae) and it's commonly distributed in India and Srilanka. Heartwood and bark of *Pterocarpus marsupium* is used as a anti-diabetic remedies since thousands of years. *Pterocarpus marsupium* is clinically established herb as a potent anti-diabetic drug. Prediabetes is a condition in which blood glucose level are higher than normal as a result of insulin resistance but not to the extent they are having type 2 diabetes. The extract of this plant is also use as a cardiac tonic, anti-diarrheal, skin disorders, rejuvenator, and hepatoprotective. The aim of present review article is to study *Vijaysar* on Prediabetes condition.

**KEYWORDS:** *Vijaysar*, Prediabetes.



### INTRODUCTION

What is *Vijaysar*? If we see briefly, this is a ancient plant which have numerous medicinal references in Ayurveda. *Vijaysar* is a deciduous tree that usually grows to a height of 30

meters. It is usually found in hilly region. The trunk is smoky in colour with visible vertical slit like marks. This tree usually has bears leaves with yellowish flower and legume like fruit.

In our ayurvedic text there is many references of *Vijaysar* for medicinal purpose like *Mehahara* (treats urinary tract disorders), *Rasayani* (rejuvenates the whole body), *Deepana* (enhances stomach fire), *Pachana* (helps in digestion), *Rochana* (stimulates appetite), *Anulomana* (improves breathing), *Vayasthapana* (prevents ageing), *Jvara* (useful in fever), *Kasahara* (Relieves cough), *Shwasha* (relieves breathing difficulties), *Amahara* (treats indigestion), *Dahahara* (relieves burning sensation), *Prameha* (manages diabetes), *Trutahara* (relieves excessive thirst), *Balya* (improves muscle strength), *Triptighno* (relieves pseudo-satiation), *Visarpa* (treats herpes), *Hridaya* (treats heart problems), *Chakushya* (treats eye problems), *Shonitasthapana* (prevents bleeding), *Pandu* (treats anaemia), *Raktamandala* (treats ringworm infections), *Sangrahini* (treats diarrhoea), *Kustha* (treats skin disorders), *Kamala* (prevents jaundice), *Medhya* (improves intelligence), *Varnya* (improves complexion), *Krimihara* (relieves intestinal worms), *Kanthya* (improves voice), *Arsha* (treats piles).<sup>[1]</sup>

What is Prediabetes condition? Prediabetes is a health condition in which you have higher blood sugar levels than normal but not high enough to be considered diabetes. What causes Prediabetes? Pancreas produces a insulin, this insulin allows blood sugar into into cells so body can use it as energy. In prediabetes cells don't respond to insulin. The cells become sluggish and pancreas makes more insulin, trying to get the cells to respond. The extra insulin makes up for the weak response. Blood sugar levels stay normal. Eventually pancreas can't keep up production and extra glucose stays in blood instead of entering cells. Blood sugar keeps rising at this point blood test may show prediabetes. Without treatment this can end up with Type 2 diabetes.<sup>[2]</sup>

### Scientific classification of *Vijaysaar*<sup>[3-6]</sup>

Family: Fabaceae

Domain: Eukaryota

Kingdom: Plantae

Subkingdom: Viridaplantae

Phylum: Magnoliophyta

Subphylum: Euphyllphytina

Class: Magnoliopsida

Subclass: Rosidae

Super order: Fabanae

Order: Fabales

Genus: Pterocarpus

Species: Marsupium

### **Ayurvedic Profile<sup>[7]</sup>**

#### **Medicinal Properties**

Guna (Qualities) - Laghu (light to digest), Ruksha (dry)

Rasa (Taste) - Kashaya (astringent), Tikta (bitter)

Vipaka (post-digestive taste) - pungent

Veerya (Sheeta) - Coolant

Effect on tridosha – balances kapha and pitta dosha

Dosage – Decoction 50-100 ml; powder 3-6 gm

### **IMPORTANTS OF VIJAYSAR**

#### **Regulates Diabetes**

According to Ayurveda *Vijaysar* is an excellent plant for managing high sugar levels by improving the metabolism due to its *Tikta* and *Kashaya* properties and *Kapha-Pitta* balancing *doshas*. The anti-glycaemic nature of *Vijaysar* plays a good role in alleviating the blood sugar level of the body. The bark powder, leaf juice or heartwood decoction use for the treatment of prediabetes, *Vijaysar* action on pancreatic  $\beta$ -cells it helps to reduce the breakdown of starch into glucose which leads to low blood glucose levels.<sup>[1]</sup>

#### **Treats Eye problems**

*Vijaysar* bark and root extract is with anti-inflammatory and antimicrobial agents. *Vijaysar* oil is proven Ayurvedic remedy in Netra Roga, Gently massage of *vijaysar* oil into the eyelids and raising it off after 15 minutes reduces swelling, redness and discomfort of eye infections, moreover *vijaysar* oil lowers eye pain, strain and ensures healthy vision.

#### **Improves Liver Problems**

*Vijaysar* having outstanding hepatoprotective components. By regulating cholesteol levels, lipid balance and dispelling all impurities, toxins from blood circulation. Consuming *vijaysar* powder in warm water aids in repairing necrosis, fatty liver symptoms in hepatic tissues.

**Brings Down Sugar Cravings**

Consuming Vijaysar decoction decreases in the ability of the person to taste sweet foods. This effectively limits cravings and helping to achieve a healthies lifestyle.

**Aids in weight loss**

Many of alkaloids and flavonoids are present in vijaysar which helps to reduce weight faster. The powder of bark also reduces the accumulation of LDL(Low density lipoprotein or bad cholesterol).

**Improving Digestion**

This plant have anti-flatulent property of the bark powder reduces the formation of gas in the alimentary canal, thus preventing flatulence, bloating and abdominal distension.

**Treats wounds and ulcers**

Petrocarpus marsupium having anti-microbial, anti-inflammatory and anti-ulcer properties. The bioactive composites are the plant encourages tissue regeneration and the juice extracted from the leaves is also used for dressing wound.

**Promotes Skin Health**

The antioxidant, antimicrobial and anti inflammatory properties portrayed by *vijaysar* bark and leaves offer blood purifying activity.

**Relieves Hair Problems**

This plant treat various hair problems like hair infection, folliculitis, itching, Dandruff. Vijaysar nourishes the hair follicules, improving blood circulation this prevents hair fall.

**Slows ageing process**

In ancient books there are many references about Vijaysar is a rasayani dravya that's helps in slowing the ageing property. Vijaysar helps in tissue repair and regeneration and antioxidant activity.

**Anti-diabetic Activity**

It possesses blood glucose lowering, beta cell protective and regenerative properties. Numerous experimental studies have been conducted on various animal species viz., rats, dogs, and rabbits to study the hypoglycemic effect of PM. The results have shown that PM restored the normal insulin secretion by reversing the damage to the beta cells and by

repopulating the islets.<sup>[8,9-21]</sup> In a study, alcoholic extract and various fractions of PM (toluene, chloroform, ethyl acetate and butanol) were found to possess beneficial effects on blood glucose levels.<sup>[22]</sup> The findings of a clinical trial (flexible dose double blind multicenter randomized controlled trial) revealed that PM is an effective blood sugar lowering agent.<sup>[23]</sup>

Three phenolic compounds were evaluated for their anti-diabetic potential and it was found that marsupin and pterostilben were more effective than pterospin on comparison with metformin.<sup>[9]</sup>

A study group of ICMR investigated the antidiabetic activity of PM at multi-center level and found that the blood glucose level significantly decreased without any side effects.<sup>[24]</sup> Another ICMR study group also proved the utility of PM in diabetes. Their findings indicated a significant reduction in blood glucose level and mean HbA1c levels from 151- 216mg/dl to 32-45mg/dl and 9.8 to 9.4% respectively.<sup>[25]</sup>

The aqueous extract of PM bark has exhibited its ameliorative potential in STZ (streptozotocin) induced diabetes. The glycosylated hemoglobin, total cholesterol, triglycerides and LDL cholesterol were normalized and the elevated levels of numerous enzymes like ceratine kinase, glutamyl transferase, aspartate transaminase, alanine transaminase, alkaline phosphatase were also brought to usual range.<sup>[26]</sup>

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Another study suggested the ability of methanolic extract of PM to improve STZ-induced chronic stress by rectifying the glycosylated hemoglobin (HbA1c), serum protein, albumin, insulin, acid and alkaline phosphatase.<sup>[26]</sup> Ethyl acetate extract of PM was utilized in another study to evaluate its anti-hyperglycemic action and it was concluded that its activity might be due its free radical scavenging property.<sup>[27]</sup> Optimized conventional (infusion, decoction, maceration and percolation) and non-conventional extraction as ultrasound- assisted extraction (UAE) and microwave-assisted extraction (MAE) methods were used in an investigation to prepare ethanolic and aqueous extracts of PM heartwood and assess their anti-

diabetic activity in alloxan induced diabetic rats. The findings verified the use of conventional methods and suggested that the antidiabetic action of PM can be improved by extracting the heartwood by non-conventional method of UAE.<sup>[28]</sup>

A high molecular weight fraction was obtained by Bio-assay- guided fractionation of PM which exhibited potent antidiabetic properties *in vitro* and *in vivo* by stimulating the insulin secretion and glucose uptake, respectively, in a concentration-dependent manner.<sup>[29]</sup> The findings of an investigation suggested that the antidiabetic potential of PM might be due to its ability to inhibit the glucose diffusion across the bio-membrane.<sup>[30]</sup> An investigation was carried out to study the effect of (-) epicatechin and insulin on glutathione content in normal and Type-2 diabetic erythrocytes. It was observed that (-) epicatechin increased the glutathione content (which was lower in Type-2 diabetic erythrocytes).<sup>[31]</sup> Treatment with aqueous extract of PM caused an increase in renal glycogen content and prevented decrease in glycogen content of hepatic and skeletal muscles. PM was also able to rectify the alterations in activities of glucokinase, hexokinase and phosphofructokinase.<sup>[32]</sup> (-)-Epicatechin has been reported to possess insulin like activity<sup>[33]</sup> and illicit protective effect on erythrocyte osmotic fragility.<sup>[34]</sup> It has been observed that (-)-Epicatechin causes insulin release (by increasing c-AMP content of the islets) and converts proinsulin to insulin.<sup>[35]</sup>

### **Vijaysar Side effects**

It is safe to consume and reported to be beneficial in Diabetic condition. Since it is used in diarrhoea, it is not suitable in case of constipation. If an individual is already taking allopathic medication they should consult a doctor before consuming *Vijaysar* for any systemic diseases.

### **CONCLUSION**

Vijaysar used since ages for the management of various diseases specially in Prediabetic condition, The one glass of water and Vijaysar powder mixed well and left for overnight, This water is consumed for a daily twice for 30 days has shown beneficial effects in individuals suffering from prediabetes. In Samhitas there are references of Vijaysar which is used for detoxify the body, purify blood sugar. Also have a reference to control overweight by natural way.

The current review has focused on the numerous pharmacological activities of Vijaysar in Prediabetic condition. It also indicated that in liver problems, eye problems, improving



diagection, management in weight loss, Hair problems, Skin issues and also treats ulcers. Most of the studies utilized Vijaysar Extract to execute the exact result.

This review provides a up coming basic researches on Vijaysar. With advance pharmacological investigation will give a broad spectrum medicinal potential.

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