

SyzygiumCumini [L]: A Review of its Antidiabetic activity

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ABSTRACT

Syzygiumcumini (S. cumini) (L.) Skeels (jambolan) is one of the broadly used medicinal plant life in the remedy of numerous diseases especially diabetes. the existing review has been primed to describe the present facts at the statistics on botany, phytochemical elements, conventional makes use of and pharmacological movements of S. cumini (L.) Skeels (jambolan). electronic database search was carried out with the quest phrases of Eugenia jambolana, S. cumini, jambolan, not unusual plum and java plum. The plant has been viewed as an antidiabetic plant since it have become commercially available several decades ago. at some stage in last 4 many years, numerous folk medicine and scientific reports at the antidiabetic results of this plant have been mentioned inside the literature. The plant 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. The good sized variety of literatures found inside the database discovered that the extracts of various components of jambolan showed enormous pharmacological actions. We suggest that there is a need for similarly research to isolate lively principles which confer the pharmacological movement. for this reason identification of such energetic compounds is useful for generating safer pills in the treatment of various illnesses inclusive of diabetes.

KEYWORD; Syzygiumcumini, Dibetic

I. INTRODUCTION

The global prevalence of diabetes mellitus (DM) is growing at an alarming rate with a reported 381 million affected in 2013. it is projected that 592 million among the world populace could be bothered with diabetes by using 2035 [1], with the finest occurrence in Asia and Africa [2]. in keeping with the state-of-the-art

survey one in four people in Sri Lanka are tormented by diabetes or prediabetes. The said incidence of diabetes among Sri Lankan adults changed into almost 11% with 36% of those with diabetes undiagnosed [1]. The high occurrence of diabetes is attributed to a mixture of things consisting of high calorie diets, low hobby life style, and genetic susceptibility [3].

Hyperglycaemia or high blood glucose is the “hallmark” of diabetes which contributes to the pathogenesis and the many headaches of diabetes [4]. lengthy-term DM leads to macrovascular complications such as coronary artery disorder, peripheral arterial sickness, stroke, and microvascular complications (diabetic nephropathy, neuropathy, embryopathy, and retinopathy) which decrease the first-class of lifestyles of people with diabetes. the key molecular foundation of the lengthy-term diabetic complications is the protein glycation which takes place inside the frame in extended quotes beneath persistent hyperglycemic conditions forming nonreversible superior glycated give up-products (a while). Glycation is a within the formation of a long time thru formation of Schiff bases and Amadori products [5] nonenzymatic reaction between carbonyl group of decreasing [i.e., glucose] sugars and free amino tropical tree (Myrtaceae) of which the bark has been broadly used in Ayurveda and Indian folks medication for the treatment of DM. Diabetic rats treated with S. cumini bark had shown large decrease in blood glucose [8] and tremendous insulin staining within the epithelia cells of the pancreatic duct . in addition, the decoction from the bark extract as used in Ayurveda medicine institution of biological proteins resulting with further oxidation and generation of immoderatequantities of reactive oxygen species [6]. these irreversible, insoluble, florescent compounds shape pass-hyperlinks with and between protein molecules and compromise their physiological features. A large body of evidence

indicates that ages are important pathogenic mediators of almost all diabetic headaches.



Regardless of the pharmacotherapy with insulin or oral hypoglycaemic pills, the recent worldwide hobby in medicinal flora utilized in conventional medicine has escalated as these had been observed to have active principles with antiglycation and antioxidant homes. thus these plant life have the healing potential to prevent the many diabetic complications with minimum unfavourable effects at a decrease fee. *Syzygiumcumini* (madan, Sinhala) is a and a ready to serve (RTS) drink prepared from the decoction had high antiglycation and antioxidant capability consequently the present study changed into conducted to discover and verify the presence of antidiabetic compounds within the decoction of *Syzygiumcumini* and to observe the supply of such compounds within the geared up to serve drink organized the use of *S. cumini* decoction.

Scientific classification

Kingdom:-Plantae

Clade:- Tracheophytes

Clade:- Angiosperms

Clade:-Eudi

Clade:-Rosids

Order:- Myrtales

Family:- Myrtaceae

Genus:-*Syzygium*

Species-*S.cumini*

Binomial name:-*Syzygiumcumini*

HISTORY AND DISTRUBUTION

Syzygiumcumini (*S. cumini*) (L.) Skeels is one of the best known species and it is very often cultivated. The synonyms of *S. cumini* are *Eugenia*

jambolana Lam., *Myrtus cumini* Linn., *Syzygium jambolana* DC., *Syzygiumjambolanum* (Lam.) DC., *Eugenia djouant* Perr., *Calyptanthus jambolana* Willd., *Eugenia cumini* (Linn.) Druce. and *Eugenia caryophyllifolia* Lam. It is commonly known as jambolan, black plum, jamun, java plum, Indian blackberry, Portuguese plum, Malabar plum, purple plum, Jamaica and damson plum.

jambosine, For long in the period of recorded history, the tree is known to have grown in the Indian sub-continent, and many others adjoin regions of South Asia such as India, Bangladesh, Burma, Nepal, Pakistan, Sri Lanka and Indonesia. It was long ago introduced into and became naturalized in Malaysia. In southern Asia, the tree is venerated by Buddhists, and it is commonly planted near Hindu temples because it is considered sacred to Lord Krishna. The plant has also been introduced to many different places where it has been utilized as a fruit producer, as an ornamental and also for its timber. In India, the plant is available throughout the plains from the Himalayas to southern India.

Chemical constituents

The chemical parts of *Syzygiumcumini* (jamun) encompass: Essential oils

The predominant components of the crucial oil from the leaves of *S. cumini* are τ -cadinol, tau-muurolol, globulol, caryophyllene, δ -cadinene, and α -pinene.

culmination

include anthocyanins, gallic acid, mallic acid, glucose, fructose, raffinose, petunidin, malvidin, and other vitamins.

Seeds

include glycoside jambolin, alkaloid and ellagic acid.

Stem bark

includes gallotannins, ellagitannins, quercetin, kaempferol, myricetin, betulinic acid, friedelin, β -sitosterol, bergenins, ellagic acid, gallic acid, and eugenin.

other chemical constituents of *S. cumini* consist of:

Alkaloids, Anthroquinone glycosides, Flavonoids, Tannins, Saponins, Phenols, Cardiac glycosides, Terpenoids, Phytoosterols, and Steroids

Terpenoids, glycosides, saponins, flavonoids, phenols, and different chemical components are liable for glucose inhibition. Jamun consists of an vital glycoside referred to as Jambolin, which inhibits starch from being transformed into sugar and so aids in blood sugar

Mechanism action of *Syzygiumcumini* in diabetic patient the precise mechanism of movement of Jamun in reducing the blood sugar and cholesterol degree isn't acknowledged. The Jamun can also have employed several putative mechanisms to carry out its consequences (parent 2). The diabetes is brought on via induction of unfastened radicals. Jamun may additionally have decreased unfastened radicals and stepped forward the functioning of β -cells of pancreas lowering the sugar degree. Jamun also stimulates the activation of different enzymes like catalase glutathione peroxidase, glutathione-s-transferase and extended synthesis of glutathione and depletes lipid peroxidation which can have additionally helped to reduce the sugar levels of cholesterol inside the blood. Jamun might also have decreased the interest of α -amylase, which is upregulated inside the diabetes. The α -amylase hobby has been determined to be reduced through Jamun.^{44,forty nine,50} At molecular stage presence of Jamun might also have upregulated the PPAR γ and PPAR α main to the suppressed activation of transcription factors including NF- κ B, nitric oxide synthase (iNOS), tumour necrosis factor-alpha (TNF- α) and cyclooxygenases causing decreased infection and safety in opposition to diabetes and hyperlipidaemia. other than this Jamun may also have also upregulated the transcription of Nrf2 main to boom inside the antioxidants which could have resulted inside the proper functioning of β -cells of

Health benefits of *Syzygiumcumini*

Ayurveda strongly recommends this berry for treating diverse situations associated with coronary heart, arthritis, allergies, stomach pain, bowel spasm, flatulence and dysentery. The diuretic effects of jamun flushes toxins out of the kidneys, even as the high fibre content aids in digestion and stops nausea and vomiting.

Jamun For numerous fitness situations:

1. Diabetes control:

Ayurveda shows Jamun as a fantastically effective fruit at the same time as combating in opposition to diabetes. The seeds of the fruit have lively elements called jamboline and jambosine that gradual down the rate of sugar launched into the blood and increases the insulin levels within the body. It converts starch into electricity and decreases the symptoms of diabetes together with frequent urination and

thrusting.

2. Wholesome heart:

Jamun is encumbered with excessive quantities of potassium. it's miles extraordinarily useful in maintaining heart associated ailments at a bay. everyday intake of Jamun prevents hardening of arteries which results in atherosclerosis, reduces the diverse symptoms of high blood pressure thereby controlling high blood pressure and forestalls strokes and cardiac arrests. A serving of 100 gm jamun incorporates seventy nine mg of potassium which makes this juicy fruit appropriate for a high blood strain food plan.

3. Weight reduction:

Being low on calories and excessive on fibre, makes Jamun a really perfect fruit in all weight reduction diets and recipes. It improves your digestion and the pharmacological houses help in minimizing water retention except boosting frame metabolism, satiating your hunger and offers you a feeling of fullness.

II. CONCLUSION

"Conclusively, jamun fruit and seed maintain nutraceutical really worth to deal with numerous food plan related malfunctions in particular hyperglycemia. inside the modern research, jamun seed and fruit extracts proved helpful inside the law of blood glucose and insulin parameters. Likewise, hyperglycemia and hyperinsulinemia had been also managed by means of the provision of jamun seed extracts. results exhibited that fruit has lower capacity than seed in reducing the sugar stages of diabetic rats. it can be concluded that jamun is ability source of clearly occurring bioactive components, for that reason regulating the blood glucose profile and may be used as curing therapy of diabetes

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