

Antihyperglycemic Activity, Free Radical Scavenging Activity and FTIR of *Syzygium Cumini* Linn Pulp Dried Extract

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ABSTRACT

Syzygium Cumini is commonly known as black plum or “jamun” is an important medicinal plant in various traditional systems of medicine. It is effective in the treatment of diabetes mellitus. The plant is rich in compounds containing anthocyanins, glucoside, ursolic acid, beta sitosterol, 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. This reviewed that validate antidiabetic effect of jamun has been primed to describe the existing data on the information on Ant hyperglycemic Activity, Free Radical Scavenging Activity and FTIR of *Syzygium Cumini* Linn Pulp Dried Extract.

Keywords: Anthocyanins; *Syzygium Cumini*; Diabetes; Antimellin

INTRODUCTION

The deficiency of insulin secretion and action causes disorder in endocrine system and it disturbed carbohydrate metabolism known as diabetes mellitus *Syzygium Cumini* Linn (family Myrtaceae) commonly known as “Jamun” is widely distributed in tropical and subtropical regions. *S. cumini* has been valued in ayurveda and unani system of medication for possessing variety of therapeutic properties, which is widely used in folk medicine for the treatment of various diseases. *S. Cumini* leaf galls, commonly known as “Karkatshringi” in sanskrit, are extensively used in ayurveda and several scholars of Indian like Charak, Sushruta, Bagvatta and many others have explained in literature about various Indian medicinal plants. Many antidiabetic plants have been reported in the Indian literature.

The black jamun is an important indigenous plant of the family *Myrtaceae* originally from Indonesia and India. The ripen fruits are purplish black in colour due to the presence of anthocyanins. Fruits are rich in minerals and have high antioxidant property which contributes to many health benefits. Jamun is highly perishable, therefore, very difficult to store and market at distant places [1]. Jamun seeds are used in traditional medicine. The presence of oxalic, tannic, gallic acids and other alkaloids create one to feel such an astringency taste. The secondary metabolites have been reported to be potent free radical scavengers [2,3]. Phenolic and flavonoid compounds

present in *S. Cumini* are responsible for antioxidant and anti-inflammatory activities [4].

Phytochemicals, Antioxidant and Antidiabetic Potential of *Syzygium Cumini* Linn Pulp Dried Extract

Investigated the presence of phytochemical from the ethanolic and aqueous extracts of these five parts leaf, stem bark, ower, root and seeds of the *Syzygium Cumini* [5]. Five parts viz, leaf; stem bark, ower, root and seeds extracts of *Syzygium Cumini* were investigated for their phytochemicals and HPTLC analysis. The plant extract contains carbohydrates, proteins, alkaloids, avonoids, tannins, steroids, tri-terpenoids, phenol and saponin [6]. studied that showed the presence of alkaloids, glycosides, triterpenoids, steroids, saponins, flavonoids, tannins but carbohydrates in the absent in extracts of *Syzygium Cumini* seed [7]. Revealed that total polyphenol and DPPH of *Syzygium aromaticum*. DPPH antioxidant activity showed here (2.2 ± 0.1). The relation of DPPH activity and α -glucosidase inhibition of ethyl acetate extracts are given significant proportional results ($r=0.833$, $p<0.001$), here showed moderate correlation was amylase inhibition activity ($r=0.419$, $p<0.05$) [10]. Concluded that phytochemicals of *Syzygium Cumini* leaf extracts using various (ethanolic and methanolic solvent) results showed that that both the contained most of the active phytoconstituents, come behind by the ethyl acetate, hexane, than aqueous extracts,

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disparate. This investigation concluded that *S. Cumini* leaves contain alkaloids, tannins, glycosides, flavonoids, saponins phenols, proteins, triterpenoids, steroids, and fatty acids etc. that have the potential antioxidant, anti-diabetic and among other therapeutic uses [11]. Evaluated that there are various names of jamun *Syzygium Cumini*, *Eugenia Cumini* and *Eugenia jambolana* used in various alternative medicine of diabetes before discover of insulin.

Antidiabetic effect of jamun this reviewed that validate antidiabetic effect of jamun [12]. Studied that alpha amylase inhibition by agar gel diffusion method. This novel study creates new concept for tribal peoples. Aqueous extract of these three beneficiary plants namely neem, jamun and banyan extract associated with inhibitory effect α -Amylase antidiabetic activity is up to 100% and sometime 70.8% and 69% respectively. Kinase regulate by *S. Cumini*

Evaluated that proliferators activator (PPAR γ) *Syzygium Cumini* methanolic extract activate the PPAR γ , kinase PI3 and glut 4 transporter kinase and PPAR α in L6 myotubes this study demonstrated the significance of Glut4, PPAR and PI3 kinase regulate by *S. Cumini* in augmenting the glucose transport. Isolated molecule lead worth parsing and activity process same [13]. Cycloheximide has posses inhibitory effect on *Syzygium Cumini* mediated uptake of glucose guided that new protein synthesis is needed for the elevated glucose transport. Summarized that *S. Cumini* plant extract isolated active molecule activate membrane surface glucose transport in kinase PI3 dependent manner [14]. Determinate that alkaloids are main biochemical component of *Syzygium Cumini* obviously they are medicinally important plants in Marathwada region. The *Syzygium Cumini* dry wit start level 24.45 to end limit was 27.47 mg/g. *Syzygium Cumini* 1.75 mg/g dry wit *Syzygium Cumini* accumulated highest level of alkaloids in its leaves over than bark and wood, and these trends of observation were similar to *Butea monosperma* and *Madhuca indicia* - throughout the course if investigation. The lipid and alkaloids content were in increasing order from wood<bark<leaves [15]. Evaluated that *Eugenia jambolana* seeds have capability to reduce blood glucose level as well as seed kernel, seed coat experiment subject on streptozotocin-induced raised diabetic rats that reduce blood sugar level. These studies were revealed that STZ-induced rats showed better [16]. Reviewed that *Syzygium Cumini* pharmacological study and traditional drug system the all five plant parts such as bark, fruit, seed and leaf are basically posses different quality astringent, sour, refrigerant, carminative, diuretic, sweet, in diabetes, leucorrhoea, gastric disorder, fever, skin diseases and wounds [17]. Studied *Syzygium Cumini* pulp posses antihyperglycemic and also useful for antihyperlipidemic effects in streptozotocin raised diabetic rats, results justify the use of a combitorial aqueous extract of pulp of jamun and another cinnamon *zylancicum* effect against streptozotocin raised hyperglycemia state [18]. Concluded that the wall of pancreatic duct cells in regeneration of insulin in *Syzygium Cumini* effect. In this experiment animals were make in four groups first is control second is treated control, third diabetic control (DC) and in fourth treated diabetic (TD). Aqueous extract of SC bark were given by test substance given daily dose 1g/kg body weight. After the thirty day histochemical

analysis of pancreas. This result is showing that increase of insulin secreting cells.

Kandan Prabakaran analyzed *Syzygium Cumini* seed extract and its invitro anti-diabetic activity. The phytochemical screening showed appreciable amount of flavonoid and steroid in the seed extract. The infrared spectral data obtained showed that the presence of characteristic functional groups of alcohol, hydroxyl, aldehydes, alkanes, alkenes, nitro compound and aliphatic amines etc. The extract exhibits the dose-dependent increase in the inhibitory effect on alpha-amylase enzyme up to 95.4%. The result proved flavonoid in *Syzygium Cumini* seed is responsible for antidiabetic properties and it is further confirmed by higher intensity of alpha amylase inhibitory effect. Identified that *Syzygium Cumini* seed have composed antibacterial and anticancer activity because of bioactive fraction it's belong family is Myrtaceae. Mostly it introduced for anti-diabetic, anti-pyretic anti-inflammatory, antioxidant activates. He explored that the methanol fraction of seed of *S. Cumini* were found to posses antibacterial potential and some more anticancer activity due to presence of various strong specific bio active component [19,20].

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