IJCRT.ORG ISSN : 2320-2882

INTERNATIONAL JOURNAL OF CREATIVE RESEARCH THOUGHTS (IJCRT)

An International Open Access, Peer-reviewed, Refereed Journal

Review Of Guava Leaves And Betel Leaves

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Abstract: Guava leaves (Psidium guajava) and betel leaves (Piper betle) are two widely used plants in traditional medicine, renowned for their bioactive compounds and therapeutic properties. This review explores the medicinal benefits, phytochemical compositions, and pharmacological activities of both guava and betel leaves. Guava leaves are rich in flavonoids, tannins, and phenolic compounds, which have demonstrated antimicrobial, anti- inflammatory, antioxidant, and antidiabetic properties. Betel leaves, on the other hand, contain alkaloids, phenols, and essential oils with known antioxidant, antimicrobial, and anticancer effects.

Keywords — Betel Leaves[piper betle], guava leaves[Psidium guajava], antifungal, antibacterial, antioxidant, antii-inflammatory

I. INTRODUCTION :

1.GUAVA LEAVES :

Guava leaves Commonly referred to as Peru, jaam, or amrud. A biological source is Psidium guajava belongings to family Myrtaceae. Chemical composition contains Flavonoids, Terpinoids, Steroids, Carbohydrates, Oils, Lipids, Glycosides, Alkaloids, Tannins and Saponins.

It is Used as Antioxidant, Antibacterial activity ,Anti-inflammatory activity, Anticancer activity. Betel leaves (Piper betle L.) commonly known as Paan Belonging to family Piperaceae, have had several Applications in Indian Folk and traditional medicine. Paan leaves have been used traditionally for treatment of Various diseases like bad breath, boils, conjunctivitis,Constipation, and headache, leucorrhoea, swelling of Gum, cuts and injuries.

1) PLANT PROFILE

Synonyms: Peru, Jaam, Amrood.

Biological source: It is dried leaves of Psidium guajava L. belonging to the family Myrtaceae.

2) Chemical Constituent:

It contain important phytoconstituents such as tannins, triterpenes and flavonoid, quercetin, pentacyclic triterpenoid, guajanoic acid, saponin, carotenoid, lectins, leucocyanidin, ellagic acid, amritoside, uvaol, oleanolic acid and ursolic acid.

3) MORPHOLOGICAL CHARACTERISTICS:

Guava leaves are simple, opposite, and decussate, with:

Colour :Guava leaves are typically green, ranging from light green to a darker shade depending on their maturity.

Odour : Guava leaves have a fragrant, somewhat earthy smell that can be herbal or even mildly sweet when crushed. The aroma is stronger when the leaves are fresh and is often described as slightly pungent or musky.

Taste:The taste of guava leaves is generally bitter with a mild astringency. This bitterness becomes more pronounced when the leaves are dried or processed. The flavour can be slightly herbal or medicinal, which is characteristic of many plants with bioactive compounds

Shape: The leaves are elliptical or ovate, with a smooth edge and a slightly pointed tip. They are medium-sized with prominent veins.

Smell: Guava leaves have a fragrant, somewhat earthy smell that can be herbal or even mildly sweet when crushed. The aroma is stronger when the leaves are fresh and is often described as slightly pungent or musky.

Texture:The texture of the leaves is slightly rough on the underside due to the presence of fine hairs. The upper surface feels smooth and waxy. When chewed, guava leaves can feel fibrous and somewhat tough, especially in mature leaves.

Margins: The leaf margins are smooth (entire) without serrations or lobes.

Size: Guava leaves typically range from 5 to 15 cm in length and about 3 to 7 cm in width, though they can vary slightly depending on the variety and environmental conditions

Surface: The upper surface of the leaf is smooth, dark green, and glossy, while the lower surface is lighter green with a slightly rough texture due to the presence of fine hairs.

Venation: The venation is pinnate, with a prominent midrib running along the length of the leaf. Secondary veins radiate from the midrib, forming an arching pattern. (6)(7).

4) Antidiabetic Activity:

Diabetes is a major chronic disease and about 10% of the world's population suffer from blood glucose metabolic disorder, mainly characterized by a hyperglycemic condition. Guaijaverin suppressed the activity of the blood glucose homeostasis enzyme dipeptidyl- peptidase IV , while avicularin inhibited intracellular lipid aggregation by impeding glucose uptake through GLUT-4 in vitro and revealed no distinct toxicity for 3T3-L1 adipose cells.

5) Antiulcer activity

Guava leaves (from Psidium guajava) have been traditionally used for various medicinal purposes, including the treatment of ulcers. Several studies suggest that guava leaves exhibit anti-ulcer properties, which can be attributed to their antioxidant, anti-inflammatory,
,Analgesic and healing effects.

6) **USES**:

The compounds from guava leaf extracts possess multidirectional biological activities, including antioxidant, hypoglycemic, anticancer, and other biological activities. It was also reported that guava leaves extract possess stronger biological activities, such as antioxidant, antibacterial, and antitumor effects . The useful bioactivities of guava leaves extract are presented in the following subsections.

2. BETEL LEAVES:

The betel (Piper betel) is a vine of the family Piperaceae, which includes pepper and kava. Chewing betel leaf (Piper betle Linn.) prevents orodental disease. Betel is known to worldwide and is consumed frequently as a mouth freshener. Anticancer potential Betel is one of the herbs that is closely related to the prevention of oral cancer. Betel leaf contains antioxidants like vitamin C, vitamin A, riboflavin, chlorophyll and phenolic is high, so it can cure cancer sores and toothache. Betel leaves is the best natural ingredient in dental caries control in Asia, which provides the best oral and contribution oral.hygiene . Potentially betel leaf is an excellent source Of anti-oxidants and has anti-microbial Properties. The anti-bacterial Activity of betel leaf is due to the presence Of polyphenols which destroys the activity Of spoilage causing microorganisms by Increasing the shelf life of foods. Betel leaf is an excellent source of natural Anti-oxidants for pharmaceutical industries In which they can be used in the medicines and food products in order to increase the Potential of the therapeutic food products.

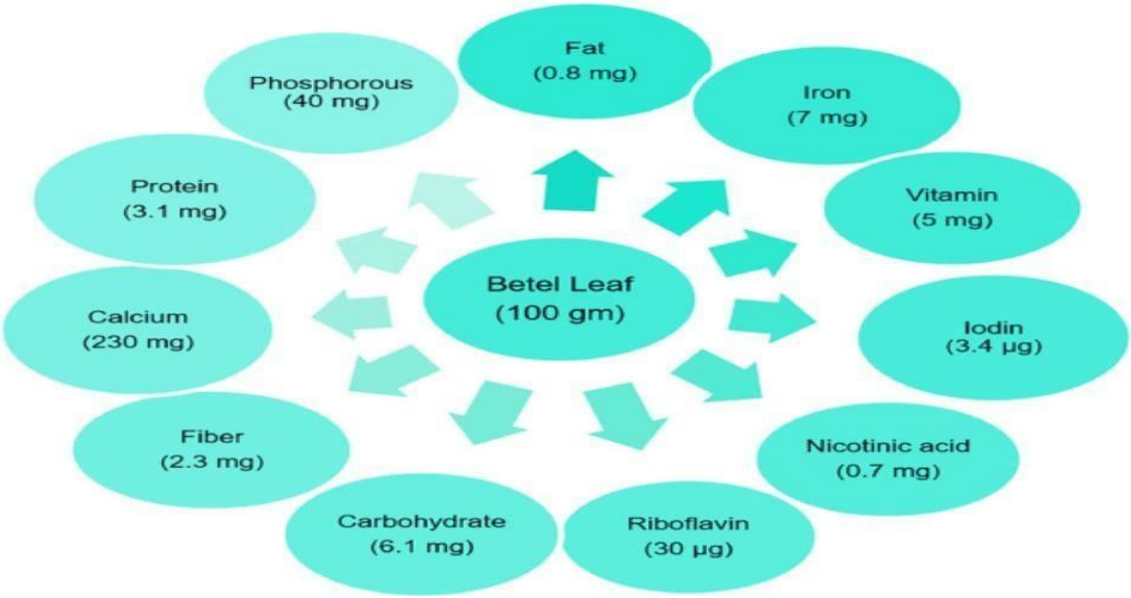
7) PLANT PROFILE

Synonyms: Betelvine, betlepepper, pan.

Biological source: It is dried leaves of piper betle belonging to family Piperaceae.

8) Chemical Constituents:

Plant contains aterpinine, P-cymene, carvacrol, chavicol and its derivatives, allylcatechol, eugenol, estragol, oxalic acid, malic acid and amino acids. Leaves contain good amounts of vitamins particularly nicotinic acid, ascorbic acid and carotin.



Constituent of betel leaves

9) MORPHOLOGICAL CHARACTERISTICS

Colour: The leaves are a rich, dark green, often with a shiny, waxy surface.

Odour: When crushed, Betel leaves release a characteristic aromatic smell, which is due to the presence of essential oils like piperine.

Taste: the taste of betel leaves (Piper betle) is generally described as pungent and slightly bitter.

Leaf Shape: The leaves are heart-shaped (cordate) with a pointed tip. They typically have a smooth, glossy surface.

Size: Betel leaves vary in size but are generally between 10–20 cm in length and 8–15 cm in width.

Texture: The surface of the leaf is smooth and leathery to the touch. It is also thick and somewhat succulent.

Apex and Base: The leaf has an acute apex (pointed tip) and a rounded or slightly heart- shaped base.

Stipules: The leaf stalk (petiole) has a pair of stipules at its base, though these are small and not highly noticeable.

Venation: Betel leaves have a pinnate venation pattern, where the main vein runs centrally, and smaller secondary veins branch out from it. The veins are usually prominent and form a distinct network.

10) Antidiabetic :

It is well known that betel leaf extract has potent anti-diabetic properties and can regulate blood glucose levels . The aqueous extract of betel leaves significantly reduced blood sugar levels in rats with low blood sugar after being tested on an overnight schedule. When compared to untreated diabetic rats, Streptozocin (STZ) diabetic rats exhibit significantly lower blood glucose levels, glycosylated hemoglobin, and decreased liver glucose-6- phosphatase and fructose-1, 6-bisphosphatase activity, although liver hexokinase levels are higher .

Betel leaf shows major medicinal properties and its function

11) Antiulcer Activity:

Evaluated the antiulcer activity of hydroalcoholic Extract of Piper betel (HEPB) leaves, in rats Employing the HCl-ethanol, acute stress and Pylorusligation models to induce the experimental Gastric ulcers. Pre-treatment with Piper betel Extract provided significant ulcer protective effect In all the experimental models along with Significant increase in gastric pH and decrease in Gastric fluid volume.

CONCLUSION:

Conclusion, both guava leaves and betel leaves offer a variety of potential health benefits, supported by traditional use and some scientific evidence. Guava leaves are particularly recognized for their antimicrobial, anti-inflammatory, and antioxidant properties, making them useful in managing digestive issues, skin conditions, and even diabetes. On the other hand, betel leaves, often used in combination with other ingredients, have been shown to possess antimicrobial, anti-inflammatory, and anti-cancer properties, though their use should be approached with caution due to the potential risks associated with betel chewing.While both leaves have promising medicinal applications, more research is needed to fully understand their effectiveness and safety. It is essential to use them responsibly, considering the possible side effects, especially with betel leaves in habitual chewing. Overall, both guava and betel leaves can complement health practices, but they should not replace professional medical treatment.

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