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Review Article

GUAVA (PSIDIUM GUAJAVA L.)-REVIEW ARTICLE

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ABSTRACT

Psidium guajava L. (Family- Myrtaceae) possess great medicinal importance. It is used for treatment of various diseases like diarrhea, gastroenteritis, dysentery, diabetes, hypertension, caries, wounds, pain and fever. It also possesses anti-microbial, anti-malarial, antitussive, hepatoprotective effects etc. It is very important to standardize the plant part phrmacognostically for its utilization in different formulation. Guava (Psidium guajava Linn.) commonly known for its food and nutritional values throughout the world. The medicinal properties of guava fruit, leaf and other parts of the plant are also well known in traditional system of medicine.

KEY WORDS: Psidium guajava, Myrtaceae.

INTRODUCTION

Many plants have been used for the purpose of reducing risk factors associated with the occurrence of chronic disorders and for many other purposes [1-6]. *Psidium guajava* L. is a small medicinal tree that is native to South America. It is popularly known as guava (family Myrtaceae) and has been used traditionally as a medicinal plant throughout the world for a number of ailments. There are two most common varieties of guava: the red (*P. guajava* var. *pomifera*) and the white (*P. guajava* var. *pyrifera*) [7-10]. All Guavas (singular guava) are common tropical fruits cultivated and enjoyed in many tropical and subtropical regions. *Psidium guajava* (common guava, lemon guava) is a small tree in the *Myrtle* family (*Myrtaceae*). Other traditional uses include decoction of leaves to cure mental disorder; thick decoction of root as paste, applied on the painful area due to arthritis. The plant extract has ability to reduce headache, stop vomiting. It can be used as heart tonic and cures constipation, physical and mental deformities. The tincture of guava along with honey is curing dry cough, common cough due to cold. It cures indigestion, acidity, swelling of the stomach caused by indigestion. It is beneficial in diarrhea and dysentery in children and burning sensation. The seeds can be used with rose water and sugar candy in enlarged liver. It is very important to standardize the plant part phrmacognostically for its utilization in different formulation. The present study dealt with the phrmacognostically characterization along with preliminary photochemical screening for understanding the active components in the plant which may be helpful to develop the individual monograph [7].

The most frequently eaten species, and the one often simply referred to as "the guava", is the apple guava (*Psidium guajava*).Guavas are typical Myrtoideae, with tough dark leaves that are opposite, simple, elliptic to ovate and 5-15 centimeters (2.0-5.9 in) long. The flowers are white, with five petals and numerous stamens. The fruits are many-seeded berries.[11]



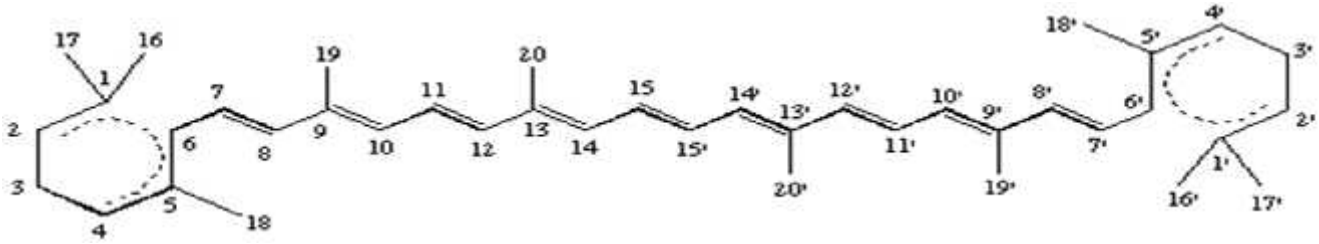
The term "guava" appears to derive from Arawak *guayabo* "guava tree", via the Spanish *guayaba*. It has been adapted in many European and Asian languages, having a similar form[12-13]

SCIENTIFIC CLASSIFICATION

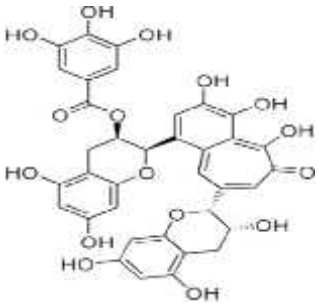
Regno: Plantae
Divisione: Magnoliophyta
Classe: Magnoliopsida
Ordine: Myrtales
Famiglia: Myrtaceae
Genere: *P. guajava*
Nomenclatura binomiale: *Psidium guajava*
Synonyms :Guiava, Guiavo, Psidio, Pero delle Indie

PHYSICOCHEMICAL STUDIES

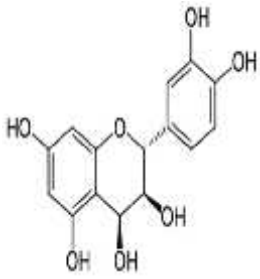
The ash values (total ash, acid insoluble ash, water soluble ash) were determined according to the official methods of Indian Pharmacopoeia [13]. The loss of drying, foaming index, swelling index and extractive values in different solvents (Petroleum ether 60-80ºC, benzene, chloroform, methanol and water) were performed according to the official methods prescribed in Indian Herbal Pharmacopeia [11] and the WHO guidelines [6].Guava leaves contain both carotenoids and polyphenols like (+)-gallocatechinand, leucocyanidin[14].As some of these phytochemicals produce the fruit skin and flesh color, guavas that are red-orange tend to have more polyphenol and carotenoid content than yellow-green ones. Phytochemical screening of the methanol extract of *Psidium guajava* leaves was performed for the detection of various phytoconstituents such as carbohydrates, protein, amino acid, steroids, alkaloids, cardiac glycosides, anthraquinone glycosides, cyanogenic glycosides, coumarin glycosides, tannins, flavonoids, gums, triterpenoids and saponins as per standard procedure [14].



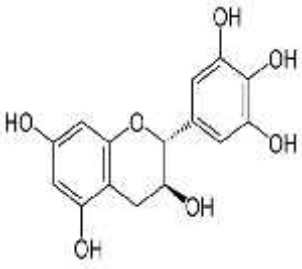
Carotenoids



Polyphenols



Leucocyanidin



Gallocatechin

USES

- Guava's use in treating diarrhea, type 2 diabetes,
- dysmenorrhea, hyperlipidemia and hypertension.
- Use of food
- Guava edible fruits can be eaten raw or cooked.
- The processing of the fruits yields by products that can be fed to livestock. The leaves can also be used as fodder[15].

USES AND PHARMACOLOGY

DYSMENORRHEAL

ANIMAL DATA

An in vitro study using uterine tissue from rats demonstrated a spasmolytic effect of guava leaf extract. Activity is postulated to be due to an estrogenic effect of the flavenoids or to anti-inflammatory effects.

Clinical data

Decreases in dysmenorrheal pain intensity were reported after 4 months of daily guava leaf extract standardized at 6 mg of flavenoids content per day [16].

Other effects

1. **Anti-inflammatory:** Guava leaf extracts has been evaluated in vitro in models of allergy and inflammation [17, 22, 23, 24] . Data from in vivo animal or clinical studies are lacking.
2. **Antimicrobial Activity:** Leaf and bark extracts have demonstrated in vitro antimicrobial activity mostly associated with flavenoids, such as Morin glycosides, quercetin and quercetin glycosides [21,25,26] Activity has been demonstrated against a wide range of gram-positive and gram-negative human pathogens including Escherichia coli , Vibrio cholera , Giardia lamblia , and Shield species, as well as Staphylococcus aurous and Pseudomonas aeruginosa . [17, 18, 20, 28, 29, 30, 31, 32, 33] Data from in vivo animal or clinical studies are lacking.
3. **Antioxidant:** Aqueous extracts from P. guajava have antioxidant or radical-scavenging activity. Most of the activity is associated with the polyphenol; however, the guava extracts also contain antioxidants, such as ascorbic acid and carotenoids [27] .
4. **Cancer:** Leaf extracts, leaf oil, guava seed, and whole plant extracts have been evaluated for potential chemotherapeutic applications. Activities against various human cancer cell lines have been demonstrated including prostate, colon, and epidermal cancers, as well as leukemia and melanoma [17, 18 , 34, 35, 36] Data from in vivo animal or clinical studies are lacking.
5. **CNS EFFECT:** Quercetin induced a reduction in acetylcholine-evoked release. The mechanism of action may be associated with an interaction with presynaptic calcium channels. In animal models, P. guajava extracts exhibited dose-dependent antinociceptive effects in chemical and thermal tests of analgesia in mice. In another study, the antinociceptive effect of P. guajava extracts was similar in potency to the nonsteroidal anti-inflammatory drug mefenamic acid and 10 times less potent to the opioid analgesic morphine Data from clinical studies are lacking [17 , 37 , 38].
   Dosage: Guava is commercially available in capsules, liquids, powders, and tablets.
6. **Diarrhea:** eight hourly doses of guava extract standardized to 1 mg of quercetin per 500 mg capsule for 3 days was used in 1 clinical trial 16 ; 10 mL of P. guajava tincture in water taken every 8 hours has also been used [17].
7. **Dysmenorrhea:** Decreases in dysmenorrheal pain intensity were found after 4 months of daily guava leaf extract standardized at 6 mg of flavenoids content per day [17]**.**
8. **Hyperlipidemia and hypertension:** 0.4 to 1 kg/day guava fruit added to the diet for 4 to 12 weeks [38, 39, 40].

TOXICOLOGY

Acute toxicity tests in rats and mice have found the median lethal dose of guava leaf extracts to be more than 5 g/kg. In vitro genotoxicity and mutagenicity tests on P. guajava in human peripheral blood lymphocytes found no disturbances in cell division or hemolysis[17, 32, 33, 34]. Despite experiments suggesting hepatoprotective effects[17,39,40] intraperitoneal administrations of ethanolic leaf extracts in rats has resulted in increases in serum liver enzymes, an effect that may be dose dependent[17, 45, 46]. No histological evidence of hepatotoxicity has been observed [2].

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