International Journal of Research in Engineering and Science (IJRES)
ISSN (Online): 2320-9364, ISSN (Print): 2320-9356
www.ijres.org Volume 09 Issue 11 ǁ 2021 ǁ PP. 42-46

Pharmacological Activities, And Therapeutic Potential of Psidium Guajava-A Review

Priyanshu shukla*[2] and Dr. Vandna pathak[1]

1. Associate professor Department of Physical sciences, faculty of science and Environment. Mahatma Gandhi Chitrakoot gramodaya Vishwavidyalaya satna M.P (India).
2. Msc.(IC) IV sem. Department of Physical Sciences, faculty of science and Environment. Mahatma Gandhi Chitrakoot gramodaya Vishwavidyalaya satna M.P.(India) .

Abstract-: *Guava(psidium guajava Linn.) Is known for its nutritional values and food throughout the world.Guava fruits can vary in size from a small as an apricot to as large as a grapefruit.Various cultivars have white,pink,or red flesh, and a few also feature red skin. A number of chemicals isolated from plant like Gallic acid,isoflavonoids,epicathechin,cathechin,guaijaverin,quercetin,naringenin,rutin have shown promising activity*
Keywords-:*Psidium guajava,medicinal, Antimicrobial, Anti-inflammatory, Anti-oxidant*

Date of Submission: 24-10-2021 Date of acceptance: 07-11-2021

I. Introduction-:

It is a small tropical tree which grows from 10 feet to 35 feet tall.It is genre of Myrtaceae family.[1] The fruit of guava tree have various medicinal and nutritional value.In previous time it's fruit, leaves,bark,roots,stem were used to treat various diseases due to the Presence of various Phytochemicals like oleanolic acid, Saponins, ara-bopyranoside, quercetin,and other volatile compounds,(2,3)

The present review discusses the morphology' of the tree, leaves fruit seed and flower it's used and Phytochemistry and Pharmacology activity.

Figure 1: Image of guava leafs and flower

Figure 2: Image of Guava fruit

Distribution-: Psidium guajava is a shurb or small tree usually growing 1-6 m tall, but sometimes reaching 10m in height. The older stems are covered in a light reddish- brown, smooth bark that peels off in flakes this sometimes gives the trunks a mitted appearance, because the newly revealed bark is somewhat greenish-beown in colour. Younger stems are greenish in colour, hairy and somewhat four-angled.[4]

Classification-:

Botanical name- Psidium guajava
Common name- Guava
Major group- Dicot
Family- Myrtaceae
Genus- Psidium
Species- Psidium guajava

Different names-:

Common Name - Guava
Botanical Name- Psidium guajava L
English Name- Guava,Abas
Hindi Name- Amrud
Sanskrit Name- Amratafalam,perala
Arabic Name- Guwafah
Chinese Name- fan shi liu
Italian Name- Guaia giallo
German Name-. Guavenbaum
Spanish Name- Guayaba
French Name- Goyave
Portuguese Name- Goiaba
Punjabi Name- Amrut
Tamil Name- Segapu
Telugu Name- Goya-pandu

Taxonomical classification (5)-:

The taxonomical classification of the plant is
Kingdom–: Plantar
Subkingdom–: Tracheobionta
Division–: Magnoliophyta
Class–: Magnoliopsida
Sub-class–: Rosidae
Order–: Myrtales
Family–: Myrtaceae
Genus–: Psidium
Species–: Psidium guajava

II. Morphology-:

Guava is a major tropical evergreen shurb or small shade tree.the fruit contains various small seeds and consists of a fleshy pericarp and seed cavity with pulp.[6] The skin colour is yellowish to orange. The flesh can be white,yellow,pink or red ,sour to sweet ,juicy and aromatic.[7,8]

Leaves- The tree s leaves are inflexible,oval, or oblong- elliptical in shape, with short,smooth, and light green to dark green petioles arranged in semi-alternating pairs,[9]

Fruit- The fruit is round pear shaped and weight is ranging from 25g to 500g Pulp is having aromatic smell and is soft and sticky.

Seed- Seeds are oblate in a kidney shape, measuring between 3 to 5 mm long and 2 to 3 mm wide, the number of seeds per fruit can range between 100 to 500.Fruit are yellow or cream in colour.[10,11]

Flower- The flowers are white, with five petals and numerous stamens.

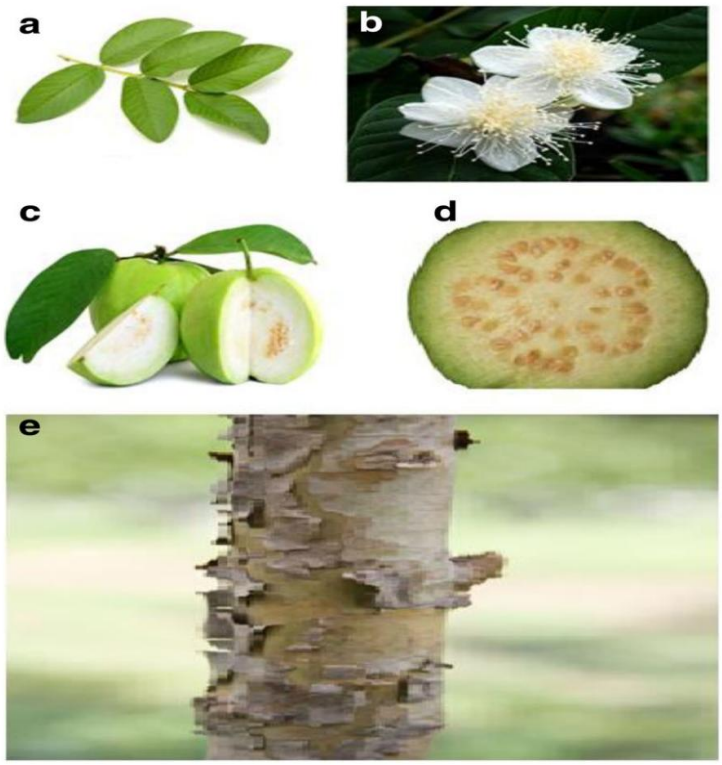

Fig. 1 Various parts of guava (**a**) Leaves (**b**) Flowers (**c**) Fruit (**d**) Seeds in the fruit (**e**) Bark

Traditional uses of guava-:[12]
It is used in different countries for different uses -
♦In india it is used as a food and used to treat Rheumatism, spasmodic, Gastrointestinal problem.
♦In china it is used to treat diarrhoea and diabetes mellitus.
♦In Pakistan used as antiinflammatory antibacterial and antidiabetic agent.
♦In Mexico it is used as antiinflammatory agent,and it used to treat gastrointestinal disorders.it is also used in skin diseases and for treating wounds.
♦In Brazil used as gastrointestinal agent and used in skin infection and treating wounds.
♦In Bangladesh it is used as gastrointestinal, antibacterial and analgesic agent.
♦In Philippines used as an astringent and in treating skin disorder and wounds.
♦In Nigeria used as an antibacterial agent and used in treating skin diseases and to heat wounds.

Phytochemistry-.
Fruits of guava- It contains iron, phosphorous calcium and vitamin A and C it has more vitamin C than the orange.Study reveals the Presence of oleanolic acid, Saponins, ara-bopyranoside, quercetin, guaijaverin, flavonoid and lyxopyranoside(31,32,33).
Leaves- leaves contain limonene 42.1% and caryophyllence (21.3%) leaves are rich in volatile compounds (2,3) they are polyphenols, particularly quercetin .They show antibacterial and antidiarrheal effects and is able to relax the intestinal smooth muscle and inhibit bowel contractions. Recent studies show that presence of betasitosterol,uvaol,ursolic and oleanolic acid
.(13)
Bark- It contains tannis (11-27%) resins and calcium oxalate crystals.
Stem- Studies shows the presence of luectic acid,leuocyanidin,amsiteside and ellagic acid in stem.(14)
Root- Shows the presence of Tannins, sterols,Gallic acid.
Pharmacology activity-:
Anticancerous/Antitumour activity-: Cancer is a complex health disorder which is identified by the development of cell proliferation or a decrease, causing apoptosis.[15] Psidium guajava was highly effective in reducing the growth of human mouth epidermal carcinoma (KB) and murine leukemia (P388) cell lines.[16]
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. This situation is

either characterized by a hyperglycemic condition this situation is either characterized by insufficient secretion of insulin from B-cells of pancreatic islet (type 1 diabetes) or the inability of cells to react in response to the secreted insulin (type 2 diabetes)[17,18]

Antioxidant activity-: The presence of phenolic is helpful in the scavenging of hydroxyl radicals and it inhibits lipid peroxidation(19,20) Compounds like pyrocatechol,ellagic acid, Taxifollin Gallic acid, ferulicacid and several others are responsible for the antioxidant activity.(21,22)

Antidiarrhea activity-: Diarrhea is one of the prominent root causes of mortality among children in the age group of 0-5 years. Guava can be used to treat the the diarrhea caused by the E,coli or S. aureus toxins.[23]

Antimicrobial activity-: Guava has a high Antimicrobial activity. Guava leaf's extract can reduce the amount of cough due to its anti-cough activity.Aqueos, chloroform and methnol extract of leaves can reduce the growth of different bacteria.Due to its anti-cough activity it is recommended in the condition of cough[24].Essential oils in guava leaves show strong Antimicrobial properties against Escherichia coli,Pseudomonad aeruginosa, Staphylococcus, Bacillus subtilis, Streptococcus faecalis,[25]]

Hepatoprotective activity-: Bilirubin, alkaline phosphatase, aminotransferase, and alanine aminotransferase present in guava is hepatoprotective in nature.(26])

Antifungal activity-: The best antifungal activity in was observed against canadida albicans, Cryptococcus neoformans, Trichophyton tonsurans, Trichophyton rubrum, Sporotrix, Candida parapsilosis, schenkil, Microsporum canis.[27]

Anti-proliferative activity-: It shows anti-proliferative activity towards KB cells with IC50.[28]

Antihypertensive effect-: Consumption of the guava fruit helps to reduce the hypertension.[29]

Toxicity:- The extracts of the leaves of Psidium guajava linn.possess beneficial effects on sperm production and quality,and may thus improve the sperm parameters of infertile males with oligospermia and nonobstructive azoospermia.[30]

III. Conclusion-:

The extract fruit,leaves,stem,bark of guava is found to have nutritional and medicinal benefits on human health.It is found to be effective in dysentery, hypertension, gastroenteritis, diabetes, pain, diarrhea,oral ulcers,cough and help to improve locomotors coordination and liver damage inflammation.

The review provide available information on phytochemistey, pharmacology action and toxicity of Psidium guajava plant.

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