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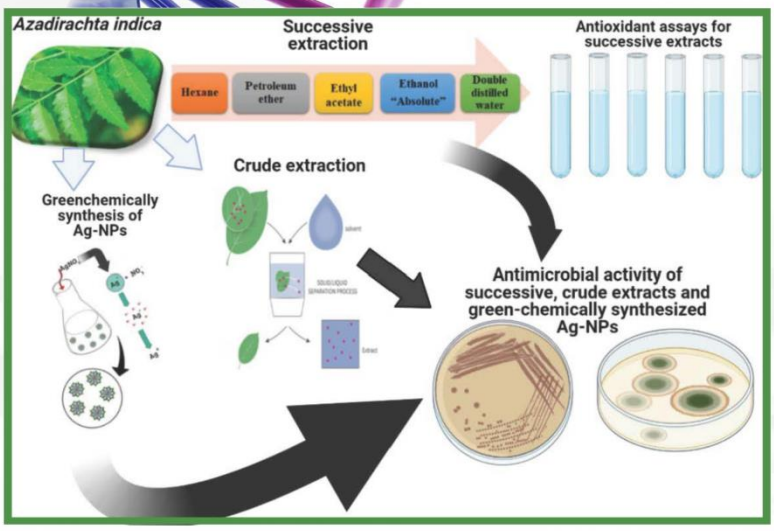

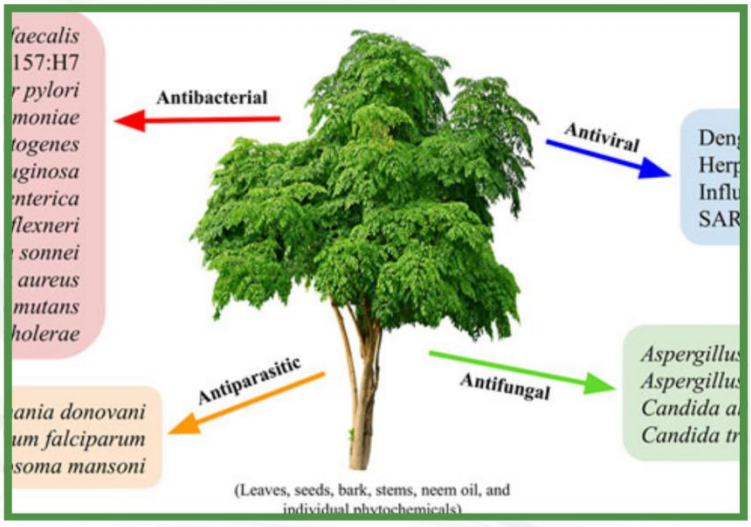

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Comparative study on the therapeutic potential of *Azadirachta indica and Psidium guajava*- A Review

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ABSTRACT

The therapeutic utilities have been portrayed both for *Azadirachta indica, Psidium guajava* both shows represent (*Azadirachta indica*) Antioxidant activity, Antifungal activity, Anti-inflammatory effect, Antibacterial activity, Antimicrobial activity. (*Psidium Guajava*) Antidiarrheal activity, Antihypertensive , Antihypertensive Agent, Wound healing activity, The objective of this articles to summerize the therapeutic properties of *Azadirachta indica* and *psidium Guajava*.

Keywords – Azadirachtaindica, Antimutagenic, Anticarcinigenic, *Psidium gujava*Anti-inflammatory, Antihyperglycemia, pharmacogenetic, Antigenotoxic

1. INTRODUCTION

The Screening of plants with medicinal properties is performed for the bioactive substances or compounds. These bioactive compounds give a way forward for the development of less expensive agents with antimicrobial properties. The drug resistance against number of microorganisms is a serious global problem. This drug resistance has become a challenge for the pharmaceutical industry and the clinicians. As the herbal drugs are rich source of the therapeutic compounds. Therefore, the use of herbal drugs is continuously rising in the developed countries. Based on a study, the bioactive components of the medicinal plants form the basis in pharmaceutical lead compounds, pharmaceutical intermediates, nutraceuticals and in medicine [1].

The new antimicrobial agents are s"fer with high efficacy. Such as a plant named as *Azadirachtaindica (neem)* has antimicrobial and other therapeutic properties. Various parts, like leaves, bark and seeds of the *Azadirachtaindica* are shown to have antimicrobial activities. The researchers have been using different techniques A plant known as *Azadirachta indica* (neem) possesses antimicrobial and various therapeutic properties. Different parts of *Azadirachta indica,* such as its leaves, bark, and seeds, have demonstrated antimicrobial effects. Researchers have employed various techniques including the Agar diffusion method and Micro-broth dilution methods. Using these techniques, the minimum inhibitory concentration of *Azadirachta indica* (neem) has been established. Studies indicated that the leaf extract exhibits significant antimicrobial activity [2].

Guava, or *Psidium guajava*, is enriched with numerous essential nutrients. Historically, it is believed that Guava was cultivated in South Africa for commercial purposes and was introduced to India by the Portuguese. As a fruit, Guava is widely grown in Asian countries, but it is gaining prominence in Western

nations mainly due to its medicinal qualities. This small tree belongs to the Myrtaceae family [3]. The tree can thrive in any soil as long as the climate is tropical or subtropical. Currently, India stands as the largest producer of Guava, followed by neighboring China [4]. Guava fruits typically measure between 4 to 12 centimeters (1.6 to 4.7 inches) in length, being round or oval depending on the species. The fruit is generally green, turning yellow as it ripens. The most frequently available guava variety in the market is the apple guava [5]. Table no. 1 provides the botanical classification of *Psidium guajava.*

2. CLASSIFICATION OF AZADIRACHTA INDICA

Table No.1 Taxonomy position of Azadirachta indica

Order	Rutales
Suborder	Retinae
Family	Meliacea
Subfamily	Melioidea
Tribe	Melieae
Genus	Azordirachta
Species	Indica

Fig. *Azadirachta indica*

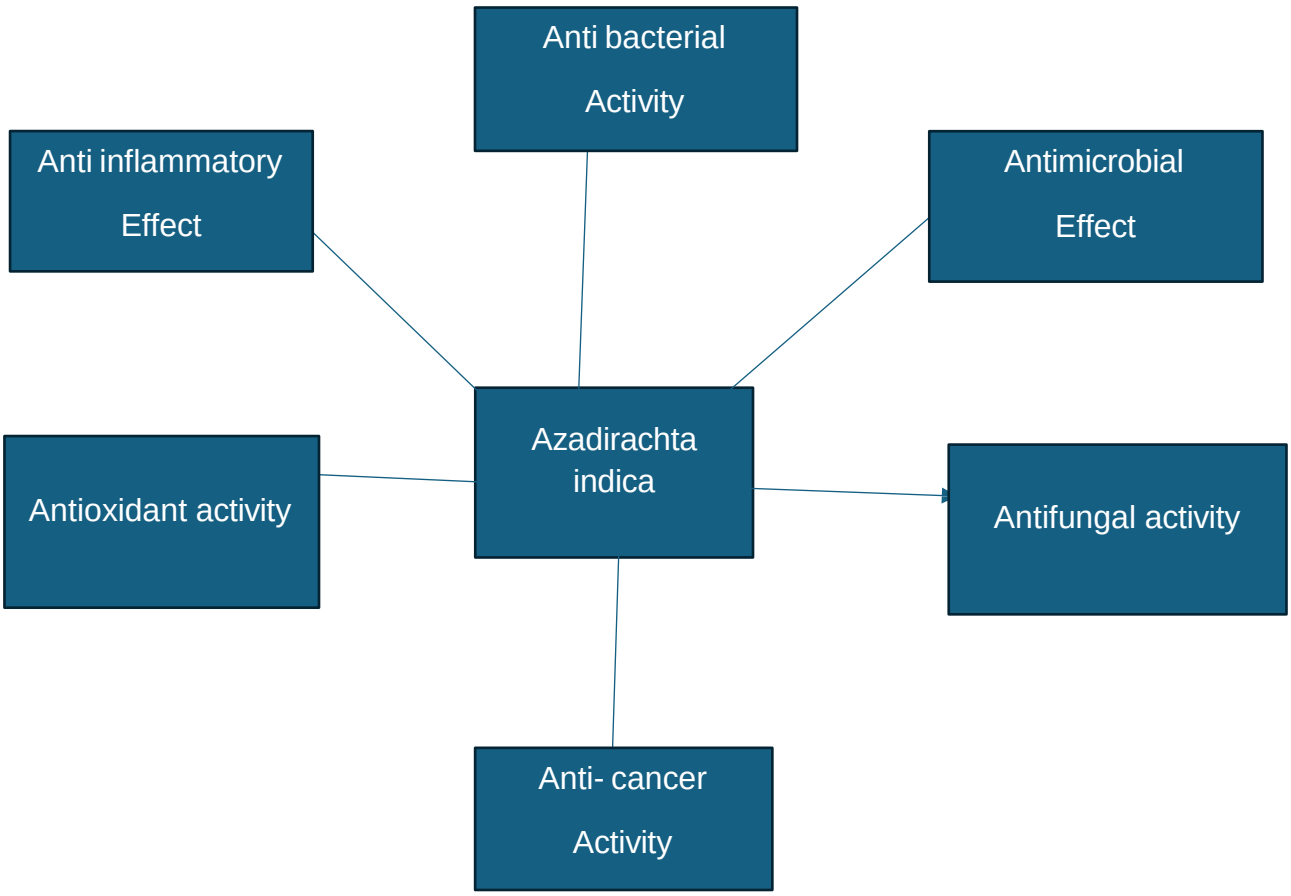

Fig.1 Different properties of *Azadirachta indica.*

2.1 ANTIOXIDANT ACTIVITY

The main culprits for generation of many diseases are free radical and oxygen species. Therefore, the important step in prevention of diseases is neutralization of activity of free radical. Antioxidant deactivates the reactive oxygen species/free radical. It also stabilizes the reactive oxygen species before they attack on any biological system. They activate the antioxidative enzyme. This ant oxidative enzyme prevents the damage due to reactive oxygen species and free radicals.[7].

Azadirachta indica, commonly known as neem, has demonstrated antioxidant properties. The leaves, seeds, bark, and oil of neem are abundant sources of antioxidants. Research found in the literature indicated that various crude extracts of neem leaves exhibit in vitro antioxidant activity.[8]

2.2 ANTICANCER ACTIVITY

Study was performed to investigate the protective effect of *Azadirachtaindica* (neem) leaves against cisplatin side effect that is nephrotoxicity and hepatotoxicity. Neem leaves showed significant protection as evidenced by the decrease of elevated serum alanine aminotransferase, aspartate aminotransferase, gamma glutamyltranspeptidase, alkaline phosphatase, total bilirubin, creatinine, uric acid and urea. The enhancement of physiological function was linked to significant protection against histopathological damage caused by cisplatin in the liver and kidneys. These findings indicate that treatment with neem leaves before, during, and after exposure can mitigate the hepato and nephrotoxicity triggered by cisplatin [9].

2.3 ANTIFUNGAL ACTIVITY

Examination was made to assess the adequacy of different concentrates of neem leaf on seed borne fungi Aspergillus and Rhizopus and results affirmed that development of both the contagious species was fundamentally hindered and controlled with both alcoholic and water extricate. According to a study, alcoholic concentrate of neem leaf was best when contrasted with fluid concentrate for impeding the development of both parasitic species [10]. Another finding demonstrated the antimicrobial part of watery concentrates of neem cake in the hindrance of spore germination against three sporulating organisms, for example, C. lunata, H. pennisetti, and C. gloeosporioides f. sp.mangiferae and aftereffects of the examination uncovered that methanol and ethanol concentrate of Azadirachtaindicashowed development restraint against Aspergillusflavus, Alternariasolani, and Cladosporium [11].

2.4 ANTIBACTERIAL ACTIVITY

Herbal alternatives as endodontic irrigants were used to evaluate the antimicrobial activity and efficacy. The resulting data was compared with the standard irrigant sodium hypochlorite, and it was seen that the grape seed extract and leaf extract exhibited the zone of inhibition[12]. It means they have antimicrobial properties. Study showed leaf extracts showed significantly greater zones of inhibition than 3% sodium hypochlorite [12].

Anther research have revealed that the neem extracts and guava have antibacterial activity against 12 strains and foodborne pathogens. The results of the study suggesting that neem extracts possess compounds containing antibacterial properties that can potentially be useful to control foodborne pathogens and spoilage organisms [13].

2.5 ANTIMICROBIAL EFFECT

Based on a study, neem has important role in inhibition of bacterial growth. It is effective against number of pathogenic bacteria, fungi and viruses .. These therapeutic activities of neem are due to presence of many active compounds. Study showed that they are present in bark, seed and leaves of the neem[14].

2.6 ANTI-INFLAMMATORY EFFECT

Anti-inflammatory effect of neem plants has been reported by various studies. In an experimental study based on rat models, nimbidin from neem trees was used orally to evaluate its anti-inflammatory response[15]. It was confirmed that the phagocytosis was inhibited, and further, the migration of macrophages to their peritoneal cavities was significantly inhibited in response to inflammatory stimuli.Moreover, in vitro exposure of rat peritoneal macrophages to nimbidin also inhibited phagocytosis and phorbol myristate acetate-stimulated respiratory burst in these cells. Nimbidin inhibited nitric oxide and prostaglandin E2 production in lipopolysaccharide-stimulated macrophages followed as in vitro exposure[15].

3. CLASSIFICATION OF PSIDIUM GUJAVA

Table No.2 Taxonomy position of psidium gujava

Kingdom	Plantae
Class	Magnoliopsida
Order	Myrtales
Family	Myrtacese
Genus	Psidium
Species	Gujava

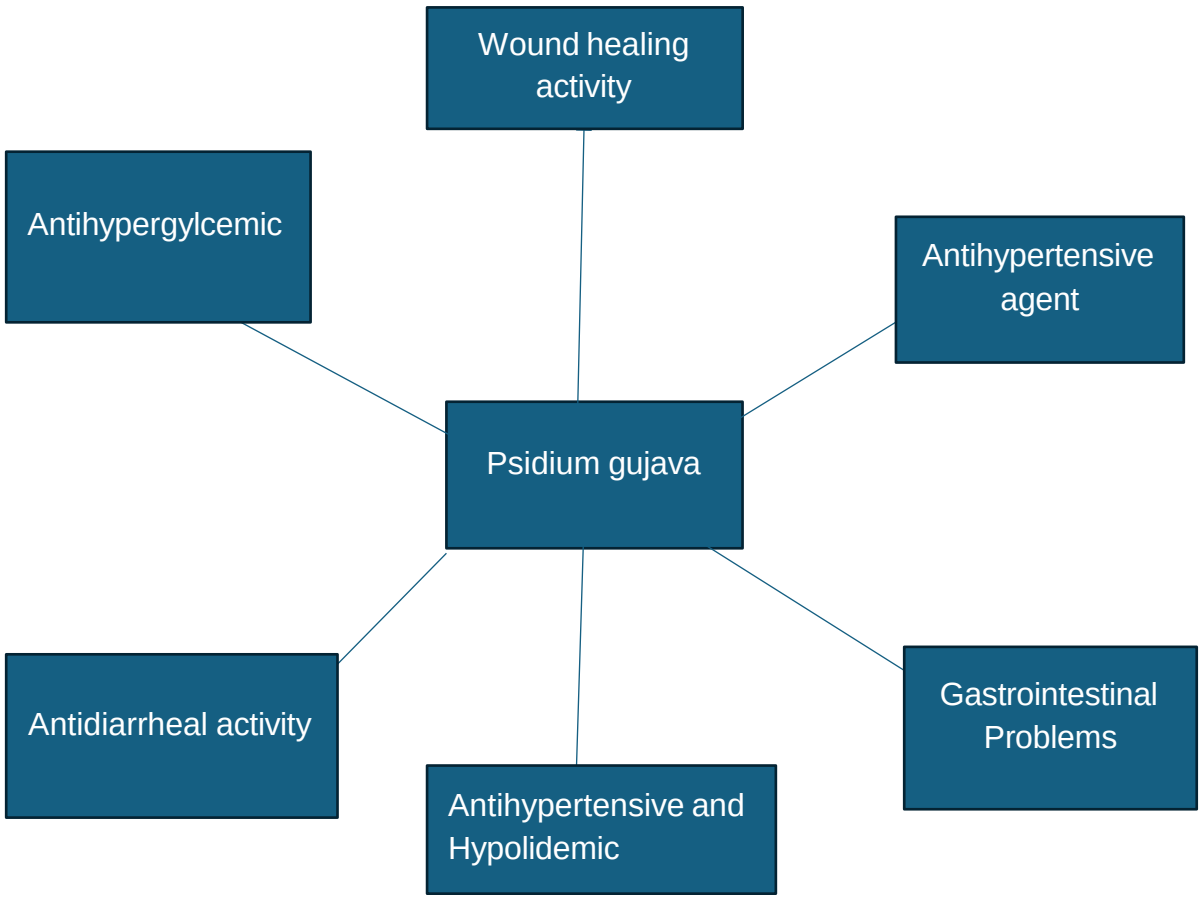

Fig.2 Different properties of *psidium gujava.*

3.1 ANTIDIARREA

Leaf extracts decreased spasms, and induced diarrhea. Reduced defecation, the severity of diarrhea, and intestinal fluid secretion reduction. Quercetin and its derivatives affect smooth muscle fibers with calcium antagonism, inhibit intestinal movement, and reduce capillary permeability in the abdominal cavity [16].

3.2 ANTIHYPERTENCVE AND HYPOLYPIDEMIC

Guava is very beneficial for managing hypertension, hyperlipidemia, and heart-related conditions. This fruit contains potassium, which aids in relaxing blood vessels and contributes to blood pressure regulation[17]. Studies indicate that daily consumption of guava leads to a noteworthy decrease in blood pressure and lipid levels, thanks to its rich potassium and fiber content. on daily basis results in significant reduction in Blood pressure and blood lipids owing to higher potassium and fibers in the fruit. Moreover, Guava contains a high concentration of pectin which causes a significant reduction in the blood lipids by delaying absorption of the foods and thereby reduces the risk of cardiovascular illnesses[18].

3.3 GASTROINTESTINAL PROBLEMS

Quercetin and flavonoid content in guava leaves has been found to counteract many diseases originating in the gastrointestinal tract. Psidium guajava leaves are an example of the plant commonly used as popular medicine for a number of gastrointestinal upset [19]. The alkalinity of fruits and leaves discourages the growth of pathogenic microbes responsible for gastroenteritis. Guava is beneficial in the treatment of diarrhea as the fruit inhibits microbial growth, releases excessive mucous from the intestine thereby helps

to bind loose stools. Guava does contain many essential vitamins and minerals viz, carotenoids, vitamin C, and potassium which discourages GIT problems. The production of excess mucus in the large intestine can be successfully removed by chewing guava leaves in empty stomach. Drinking guava leaf tea in moderate quantity results in maintaining consistency of the stool. Guava leaf extract is used to get rid of gastrointestinal disorders because of its quercetin and flavonoids content [20].

3.4 WOUND HEALING ACTIVITY

The plant provides astringent activity in treating wound healing activity and skin damage repair properties.

Decoction of the bark, leaf, and flowers is used in formulating eye products for their soothing effects. The solvent extraction of guava shows antiallergic activity. The guava cream has adjunctive therapy in atopic dermatitis[21,22].

3.5 ANTIHYPERTENSIVE AGENT

The consumption of guava fruit daily significantly reduces blood pressure levels. Guava is a source of potassium, which aids in relaxing blood vessels and contributes to managing blood pressure levels .Guava contains potassium which further investigation studies on guava,therapeutic activity on cancer.

Hence, a significant amount of investigation is required on its pharmacodynamics, kinetics and proper standardization, and clinical trials are needed to exploit their therapeutic utility to combat various diseases[23].

3.6 ANTI-HYPERGLYCEMIC

The rapidly increasing diabetes mellitus is becoming a serious problem to human health in several areas of the world. With the distinctive traditional medical opinions as well as natural medicines mainly originated by herbs, traditional medicine offers good clinical opportunities and shows a bright future in the treatment of diabetes mellitus and its complications. The effect of guava bark, leaves and fruit as antidiabetic agents has been studied by several author.[24] Evaluation of anti-hyperglycaemic activity of the ethanolextract obtained from the stem bark of guava on blood glucose levels of normal, alloxan-induced hyperglycaemicrats and normal glucose loaded rats[24].

4. CONCLUSION

Both the plant shows *Azadirachta indica* and *psidium guajava* enormous potential.Both *psidium Guajava* and *Azadirachta indica* exhibit strong medicinal properties, but they are used for different purposes: *Azadirachta indica* is primarily known for its antimicrobial, antioxidant, and digestive health benefits.They are so many active compound (psidium guajava)flavonoids, tannins, carotenoids, terpenoids, saponins, and vitamin C.(azadirachta indica) Nimbin, nimbidin, azadirachtin, tannins, flavonoids,and limonoids. The shows activity Antioxidant, Antibacterial and Antimicrobial, Antiviral, Anti-inflammatory , Anti diabetic, Gastrointestinal benefits, Wound healing activity, Oral health,Skin care , Liver protection, Anti-

cancer.Neem is more potent in antimicrobial, anti-inflammatory, skin care, and liver-protective applications.Because of their active compounds like Nimbin, nimbidin, azadirachtin, tannins, flavonoids, and limonoids.*psidium Guajava* and *Azadirachta indica* pare well-known medicinal plants with significant therapeutic properties. Both are widely used in traditional medicine systems like Ayurveda, Unani, and folk medicine.

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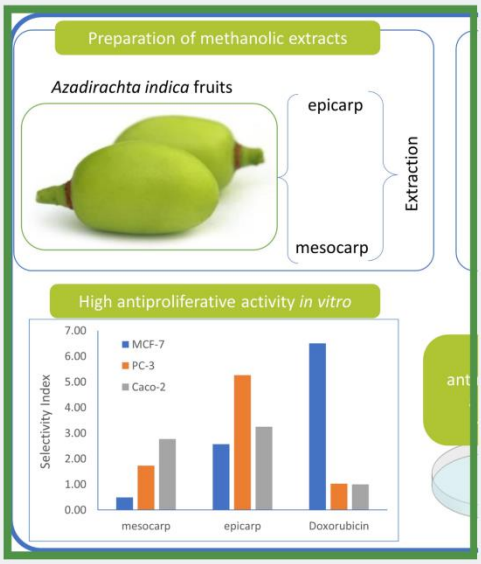

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