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### MEDICINAL AND TRADITIONAL PROPERTIES OF PSIDIUM GUAJAVA: A REVIEW

**Nishchay Thakur, Shuchi Upadhyay and Preeti Samant**

Department of Food Technology, SALS, Uttarakhand University, Dehradun

Corresponding Author's Email: [shuchi.diet@gmail.com](mailto:shuchi.diet@gmail.com)

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**Abstract:** The leaves are well known for medicinal and herbal properties. Due to fast life and westernization all leaves based products has been replaced by cosmetic and chemical based products. The normal sized guava tree (*Psidium guajava*) is a medium sized tree belonging to the family Myrtaceae which is native to tropical countries. This review summarizes the current knowledge of major pharmacological constituents with major emphasis on traditional and pharmacological activities of fruit based leaves which has discarded by people because of lack of awareness. It is reported that the presence of folic acid in guava leaf are responsible for the antioxidant activity. Various tests are being performed on both the leaf extract in its dried as well as fresh form, like DPPH, Total phenolic content, Vitamin C, moisture determination. In view of its wide pharmacological and biological activities, it seems to be having a great therapeutic potential

**Keywords:** *Psidium guajava*, DPPH, Leaves, Antimicrobial, Anticancer activity.

**Postal Address:** SALS, Uttarakhand University, Premnagar Dehradun 248007

### INTRODUCTION

The decoction of the leaves is used as febrifuge, antispasmodic and for rheumatism in India (Hernandez, 1971). The leaf extract powders have great health effects as in lowering the LDL (Low density lipoprotein), bad cholesterol and lowers the blood sugar level i.e. the diabetic patients are being recommended to obtain these products for good and safe health. each and every parts of the guava plant are used in folk medicine for the treatment of various human ailments such as scars, wounds, ulcers, bowels and cholera (Begum *et al.*, 2002). The leaf extract powders are obtained by drying the grounded material of fresh fruit leaves by using the tray dryer rather than sun drying or freeze drying. Though the drying of leaves may decrease the polyphenols and natural pigments of the fresh one. The agro industrial waste are now being used as biomass

for energy generation, the acceptance of guava leaves includes the rejection of more than the total amount of fruits accepted including the pseudo stems and leaves. The leaves also come under the edible raw material depending upon the type of consumption and its benefits. These leaves have a lot more uses and can be used as a potential source of income for the farmers which directly increase the wages. The guava leaf also has some unique anticancer properties, like the ethanolic extracts of guava leaf has Meroterpenoids which has the ability to reduce the growth of tumor cells and stimulates the uterus proliferation which indicates that these compounds acts as a selective estrogen receptors modulators (Kim *et al.*, 1998). Many people are in a habit to consume the guava leaf extracts which could possibly result in treatment of dysentery and diarrhea (Gutierrez *et al.*, 2008). The guava leaf extracts also have a high total phenolic content which hinder the peroxidation

reactions in the internal body of human and helps in the prevention of chronic diseases similar to cancer, diabetes, and cardiovascular diseases (Gutierrez et al, 2008). The fruit guava has lots of uses as it can be used for making jams, jellies, etc. The fruit is free from fat and cholesterol and has become a potential food product in an individual's diet.

#### **Antimicrobial activity**

There are many reasons which defines the consumption of dry guava leaf extracts could possibly help in the chronic diseases. The *beta – streptococcus group A* and *staphylococcus aureus* shows the hindrance in various dried methanolic and chloroform extracts of guava leaf which could make the recommendation for the use of these extracts for medicinal uses (Jaiarj et al, 1999). Antimicrobial activity is also reflected from the methanolic leaf extracts of the guava inclusive of its stem. The organism hindered is salmonella species, bacillus species, and the amount of antimicrobial effect varies to the amount of organisms (Abdelrahim et al, 2002). The protein depletion activity of the guava leaf results in the in vitro antibacterial activity of the leaves of *staphylococcus aureus* (Belemtougri et al, 2006) And the fish pathogenic bacteria could also be finished by the presence of flavonoids which has direct bacteriostatic effects (Rattanachaiakunsopon et al, 2007). The dried leaf extracts also have some bacteriostatic and fungi static in action, the control on the pandemic disease of influenza virus was done by the dried tea of the guava leaf plant and this mass blockage of the target makes the resistant of the virus to less likely get the lead (Sriwilajaroen et al, 2012).

#### **Antioxidant activity**

The antioxidant activity of the guava leaf must be extracted from the aqueous and ethanolic extracts which reflects presence of total flavonoids in it (Wang B et al 2007). The guava leaf shows some beneficial effects on the production of sperm and its quality and enhance the quality parameter of sperm for the infertile males (Akinola et al, 2007). The antioxidant activity when calculated with different solvents of

guava leaf has truly indicated that the antioxidant ability of the guava leaves has a strong relationship with the phenolic content when compared to flavonoids content (Seo et al, 2014). The antioxidants level in the dried guava leaf extracts is less compared to the fresh one. Similarly, the phenolic compounds of the dry leaves form the bond with the chemical components such as proteins or it may show some modifications in the dried structure of leaf which alters or reduce the amount of total phenolic content in it. When streptozoin was injected in the diabetic mice the antioxidant level was determined which shows clear depletion of glucose level and lipid peroxides, which is because of the presence of ethanolic guava leaf extracts (Manikandan et al, 2016). The results indicate that the drying has favorably lowered a higher percent of antioxidant in the dried products as compared to the fresh leaf samples. These all results could possibly indicate that guava leaves can be a potential source of natural antioxidants.

#### **Antidiabetic activity**

The guava leaves and its extract are well known for its medicinal uses, they are also being recommended by the doctors as well as the scientist have also researched a lot and made us believe that the use of the extracts would work for the betterment of an individual and will prolong the period of disease free in human beings. The guava juice has an observable hypoglycemic action on the normal as well as on diabetic mice (Cheng et al, 1983). The small intestinal mucosa of the diabetic mice has the alpha – glucosidase activity which could be hindered after the consumption of the guava leaf aqueous extracts (Wang et al, 2007). The access intake of the guava leaf extracts may rise in the plasma insulin level and a huge fall in the blood sugar level. The non – ageing fruit peels clearly evaluates the hypoglycemic and antidiabetic action in all the three formats of rats on whom the study has been made such as normal, mild and severely diabetic infected with streptozotocin induced (Rai et al, 2009). The quercetin (a flavonoid) which is present in the aqueous leaf extract of guava may increase the uptake of

glucose in rats, which could lead to the promotion of hypoglycemic activity in diabetic mice (Cheng et al, 2009). The results from the above includes that the guava leaf extracts are a potential natural anti-diabetic source which could prevent us from many harmful disorders.

### Anticancer activity

Studies has shown anticancer drugs extracted from the natural compounds has enabled its use in the treatment of cancer in the current scenario. Guava leaves and its extracts are among those natural compounds which can be used as an anticancer drug. The cancer cells like DU-145 can be easily hindered by using the aqueous extracts of guava leaves in a dose and time dependent manner. Guava leaves consists of polyphenolic compounds which shows solubility such as gallic acid, catechin, epicatechin, quercetin and rutin and to exhibit the potent anticancer activity (Chen et al, 2007). The guava leaves potentially consists of powerful anti DU-145 effect (Peng et al, 2011). The haematological and solid neoplasias can reflect anticancer activity by the exertion of guava leaves extracts. All these could easily result in the different signaling pathways and tumor genesis with the involvement of guava leaves. This has been listed for the best source of cancer treatment and prevention from the disease. There are some more benefits of guava leaf extracts which shows great health condition on the uptake of these natural compounds which has a medicinal role as well. Like all the phytoconstituents such as polyphenolic compounds, flavonoids, quercetin, tannin, and other chemical compounds present in the plant are considered for the noticeable hypotensive effects of the guava leaf extracts (Ojewole et al, 2005).

### CONCLUSION

The leaf of guava has shown a lot of medicinal properties which reflects its use in the daily life. The peels of un-ripened fruit could also be used in it and can be a ray of hope for all the agricultural land workers which could not let all these in a waste and bring it in use. The awareness has to be generated to the people for

the use of guava leaf extracts which would result in the betterment of an individual without leaving any side effects. The above study has proved that the natural compounds present in the guava leaf extracts can help us in treating with hypertension, diabetic problems, cancer related effects, cardiovascular effects, etc.

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