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## RESEARCH ARTICLE

## “A GUAVA A DAY KEEPS THE DENTIST AWAY”

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**Abstract**

**Objective :** To evaluate the anti cariogenic activity of guava leaf extract against streptococcus mutans and L. acidophilus

**Method:** In vitro anti bacterial sensitivity study of guava extract (water and ethanol extract) against **Streptococcus mutans** and **L. acidophilus** was assessed by evaluating the inhibitory zone on blood agar plate for 24hrs

**Result:** After 24 hr of incubation agar plates showed a zone of inhibition of 6mm for **Streptococcus mutans** and 2.5 mm for **L. acidophilus**. The observation of this study indicates the growth inhibitory effects of both the extracts against streptococcus mutans and L. acidophilus.

**Conclusion:** Guava leaf extract has an anti cariogenic activity against streptococcus mutans and L. acidophilus

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**INTRODUCTION**

Dental caries is an infectious disease in which streptococcus mutans and lactobacillus are implicated as the etiological agents, although other oral bacterial species probably contribute to this disease<sup>1</sup>. Though there are a variety of synthetic antimicrobial agents used to prevent dental caries, they have some shortcomings. Since centuries the concept of GREEN MEDICINE that is the use of plant material extracts have shown to possess therapeutic properties and proved to be a better and safer alternative to prevent childhood caries.

Green Medicine ideally have the following properties like: Broad spectrum antimicrobial efficiency, retain antimicrobial efficiency at low concentrations, It is fast acting, non-toxic, non-irritant, has a pleasant or neutral odor and taste, good oral retention properties, not too disruptive to the oral microbial ecology, global regulatory approved, Chemically and physically stable and Cost effective.

Therefore the objective of this study was to evaluate the anti cariogenic activity of Psidiumguajavalinn (Guava leaves) extract against streptococcus mutans and lacto bacillus.

**Materials and methods:**

An In vitro anti bacterial sensitivity study of guava extract (water and ethanol extract) against **Streptococcus mutans** and **L. acidophilus** was done .

Two types of guava leaf extract were prepared

1. Water based extract
2. Ethanol based extract

The guava leaves were cleaned and sun dried . Then the leaves were weighed. For water extract, every 10ml of de ionized water was mixed with 1gm of leaf. It was boiled for 15 min to get a concentrated extract. This extract was filtered using a filter paper. For ethanol extract the leaves were immersed in 5% ethanol in a closed conical flask for

24hrs. Then a concentrated extract was obtained using a Rota vaporizer (distillation). Further it was filtered using a filter paper. Both the water extract and ethanol extract of guava leaf was tested for anticariogenic property against *Streptococcus mutans* and *Lactobacillus* by evaluating the inhibitory zone on an agar plate for 24hrs. Wells of 6 mm diameter were bored in the medium with the help of sterile cork-borer having 6 mm diameter. *Streptococcus mutans* MTCC 890 strains were used and cultured in sheep blood agar. *L. acidophilus* ATCC 4358 strain was used and cultured in de Man, Rogosa, Sharpe (MRS) agar. 50 µl of both extract was added to the well in both agar plates. Microbiological study was conducted by disc diffusion method.

## Results

In vitro anti bacterial sensitivity of guava extract (water and ethanol extract) against *Streptococcus mutans* and *Lactobacillus* was accessed. After 24 hr of incubation of the agar plates there was a zone of inhibition of 6mm for *Streptococcus mutans* and 2.5 mm for *L. acidophilus*. There was no difference between the water and the ethanol extract.

## Discussion

In this study extracts of guava leaves were tested against *S. mutans* and *L. acidophilus*. The guava leaves has been reported to contain compounds having strong antibacterial properties like essential oils, flavonoids, saponins, nerolidiol, β-sitosterol, ursolic, crategolic and guayavolic acid<sup>2</sup>. Thus, this study was conducted to evaluate the efficacy of guava leaves, against caries causing *S. mutans* and *L. acidophilus*.

Ngoroyemoto *et al.* studied the ethanolic and methanolic extracts from roots of guava and found these to be effective against *L. acidophilus*<sup>3</sup>. S. Saraya *et al* observed highest growth inhibitory efficacy against *S. mutans* which suitable to apply and develop as antiplaque agent for the treatment of dental caries<sup>4</sup>. In the present study, disc diffusion method was employed for microbiological assay. *S. mutans* and *L. acidophilus* was cultured on blood agar. After 24 hr of incubation of the agar plates there was a zone of inhibition of 6mm for *Streptococcus mutans* and 2.5 mm for *Lactobacillus*. Apart from leaves, extracts from other parts of guava had also been found to possess antibacterial activity.

Results of this study demonstrated almost similar efficacy of ethanolic extract of guava leaves and water based extract guava leaves.

The present study evaluated quantitatively the antimicrobial potential of guava leaves extract against *L. acidophilus*. However, further quantitative research is needed to know the minimum inhibitory concentration and to evaluate the effectiveness and safety of guava extracts *in vivo*. In future this study might be beneficial of the formulation of oral cavity herbal products such as chewing gums, toothpaste mouth wash and intracanal irrigant .

## Conclusion

Though this study showed a significant zone of inhibition for cariogenic bacteria, a study should be conducted on a large scale to come to a definitive conclusion.

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