

ANTIBACTERIAL POTENTIAL OF CITRUS SINENSIS ESSENTIAL OIL FOR FOOD PRESERVATION

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Introduction & Objectives:

Chemical and synthetic preservatives have been widely used to preserve and extend the shelf life of food products. However, chemical preservatives can have negative effects on food safety and harm the health of consumers due to their carcinogenic and teratogenic effects or their residual toxicity. Therefore, natural compounds must be adopted to ensure the freshness and quality of food (Sharma *et al.*, 2020). Essential oils are one of those natural compounds that are used nowadays to extend the shelf life of food products, as they exhibit strong antioxidant and antimicrobial activity. This study was conducted to evaluate the antibacterial activity of the essential oil extracted from the bark of the orange tree in order to highlight it as a food preservative.

Methodology (Material and methods):

The peels of *Citrus sinensis* were cleaned and then dried at room temperature. The plant has been finely ground and preserved. Extraction was carried out by the hydrodistillation. A Fourier transform infrared spectroscopy analysis was performed to identify the main functional groups in the sample. The determination of the minimum inhibitory concentration (MIC) against the strains *Staphylococcus aureus* and *Micrococcus luteus*, was carried out using the microdilution method using microplates from 96 wells. Citric Acid was used as a positive control.

Results and Discussion:

The results showed that the yield obtained was 1.36%. FT-IR characterization results confirmed the presence of sesquiterpenes and monoterpenes. The study of the antibacterial power revealed a strong activity of our oil against the strains *Staphylococcus aureus* and *Micrococcus luteus*.

Conclusion:

From these results it can be concluded that the essential oil of *Citrus sinensis* can be considered as a source of bioactive compounds.

Keywords: antibacterial activity, essential oil, *Citrus sinensis*, extraction, FTIR

References

1. Sharma, S., Barkauskaite, S., Duffy, B., Jaiswal, A. K., & Jaiswal, S. (2020). Characterization and antimicrobial activity of biodegradable active packaging enriched with clove and thyme essential oil for food packaging application. *Foods*, 9(8), 1117.

