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Photochemical and Antimicrobial Activity of Peel Oil of Citrus sinensis: A Review

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ABSTRACT

Citrus sinensis, commonly known as sweet orange, is a widely cultivated fruit known for its nutritional and medicinal benefits. The peel of Citrus sinensis contains essential oils with potential photochemical and antimicrobial properties. This review aims to explore the photochemical constituents present in the peel oil of Citrus sinensis and evaluate its antimicrobial activity against various pathogens.

Keywords: Citrus sinensis, sweet orange, peel oil, photochemical activity, antimicrobial activity, pathogens.

INTRODUCTION

Citrus sinensis, belonging to the Rutaceae family, is a popular fruit known for its high vitamin C content and numerous health benefits. The peel of Citrus sinensis is often discarded as waste, despite containing valuable essential oils. These essential oils are known to possess various bioactive compounds that contribute to their photochemical and antimicrobial activity.

METHODS

A comprehensive literature search was conducted to collect relevant research articles, review papers, and scientific databases. Keywords such as "Citrus sinensis," "sweet orange," "peel oil," "photochemical activity," "antimicrobial activity," and "pathogens" were used to identify suitable studies. The collected data were critically analyzed to present a comprehensive review on the photochemical and antimicrobial activity of Citrus sinensis peel oil.

RESULTS

The peel oil of Citrus sinensis contains a diverse range of photochemical compounds, including limonene, linalool, myrcene, and α-pinene, among others. These compounds possess various biological activities such as antioxidant, anti-inflammatory, and antimicrobial properties. The antimicrobial activity of Citrus sinensis peel oil has been evaluated against both Gram-positive and Gram-negative bacteria, as well as fungal pathogens. The results show promising inhibitory effects against a wide range of microbial strains.

DISCUSSION

The photochemical compounds present in Citrus sinensis peel oil contribute to its antimicrobial activity by disrupting the structural integrity of microbial cells. The bioactive compounds present in the oil exhibit bactericidal and fungicidal effects, making it a potential natural alternative to conventional antimicrobial agents. Additionally, the photochemical constituents in Citrus sinensis peel oil also possess photoprotective properties, making it a valuable ingredient in cosmetic and sunscreen formulations.

CONCLUSION

The peel oil of Citrus sinensis exhibits significant photochemical and antimicrobial activity, which can be attributed to the presence of bioactive compounds. The oil shows promise as a natural alternative to synthetic antimicrobial agents, with potential applications in the pharmaceutical, cosmetic, and food industries. Further research is

warranted to explore the full potential of Citrus sinensis peel oil in various applications and to elucidate its mechanisms of action against different pathogens.

Overall, this review provides valuable insights into the photochemical and antimicrobial properties of Citrus sinensis peel oil, highlighting its potential as a natural antimicrobial agent. It serves as a foundation for further research and development of Citrus sinensis peel oil-based products for various applications.

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