

# Efficacy of Tea Tree Essential Oil as a Bioprotectant to Increase Shelf Life of Fresh Fruits and Vegetables †

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**Abstract:** Recent days, there is an increasing demand for fruits and vegetables for their high nutritional value. But they are easily spoiled and have a shorter shelf life. Preservation of fruits and vegetables for a longer period is a big challenge faced by the world. Secondary metabolites found in aromatic plants form the essential oils. They have a faster and easier degradation rate and cause less extension of environmental contamination. Essential oils fall into the group of natural additives as they are obtained from plant extracts and possess a wide range of antimicrobial activity against food spoilage bacteria and fungi. Several scientific researchers have reported the use of active compounds such as “Terpinen-4-ol and 1,8-Cineole” promotes the preservation of fresh products like fruits and vegetables because of their antimicrobial properties. Tea tree oil (*Melaleuca alternifolia*) contains various active compounds that reduce mold on fruits and vegetables. In this study, an essential tea tree compound was docked with toxins produced by bacteria and showed better interaction between them. The results suggest that compounds from tea tree oil interact with bacterial virulence factors (toxin) and eventually prevent bacteria’s growth. This could be used as a natural remedy to increase the shelf life of fresh products.

**Keywords:** tea tree essential oil; antimicrobial activity; preservation; shelf life.

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## Conflicts of Interest

The authors declare no conflict of interest.