



Tea tree (*Melaleuca alternifolia*) Essential Oil Concentration in Microemulsion with Antibacterial and Antifungal Activity: An Overview

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Abstract



References



Citations



Supplementary Data

The tea tree (*Melaleuca alternifolia*), a member of the Myrtaceae family, is a valuable medicinal and aromatic plant. Tea Tree essential oil (TTO) has many medical applications, including antibacterial, antifungal, antiviral, antiprotazoal, anti-inflammatory, antioxidant, and anticancer properties. Although the concentration of TTO in a microemulsion is of economic interest, very few studies on this product have been conducted. In this study, we look at how different tea tree oil concentrations in microemulsion formulations affect susceptibility to various bacteria and fungi. TTO susceptibility in a diverse range of microbial species has now been studied using data from a previously published literature review survey. Most bacteria are resistant to TTO at concentrations as low as 1.0 percent, but mucosal skin *staphylococci* and *micrococci*, *Enterococcus faecalis*, and *Pseudomonas aeruginosa* have minimum inhibitory concentrations much higher than 2 percent. TTO susceptibility in fungi has only recently been scrutinized. Fungicidal dosages range from 0.12 to 2 percent, with minimum inhibitory concentrations ranging from 0.03 to 0.5 percent and the only notable exception is *Aspergillus niger*, which contains fungicidal concentrations of up to 8%. The review emphasizes the importance of new antibacterial and antifungal formulations, as well as the role of natural essential oils in the discovery of new antibacterial and antifungal agents, and discusses, in brief, all constituents derived from the essential oil (tea tree) that are in preclinical and clinical development. This paper summarizes human and food-borne bacteria and fungi susceptibility to tea tree essential oils and their constituents. Among the many tested, essential oils of spices and herbs (*Melaleuca alternifolia*) were found to have the strongest antimicrobial properties. This review looks at a wide range of scientific literature, including Sci-hub, Google Scholar, Pub, Chem, NCBI, and web books.

Keywords: Antibacterial activity; *Melaleuca alternifolia*; antifungal activity; antimicrobial activity; microemulsion; tea tree oil