

**TITLE:** ACTIVITY OF *Melaleuca alternifolia* ESSENTIAL OIL ON FLUCONAZOLE-RESISTENT *Malassezia pachydermatis* ISOLATES

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**ABSTRACT:**

The *Melaleuca alternifolia*, also called tea tree, native to Australia, is widely used by Aborigines in traditional medicine to treat bruises, insect bites and skin infections. It was used in World War II by the Australian Army as an insect repellent and antimicrobial agent, inserted in first aid kits. The plant's essential oil contains approximately 100 chemical components, with terpinen-4-ol considered to be primarily responsible for its antimicrobial properties. Anti-inflammatory and antimicrobial action against Gram-positive and Gram-negative bacteria, fungi and viruses have been reported. *Malassezia pachydermatis* is a non-lipophilic, non-mycelial and unipolar yeast. This commensal yeast may become pathogenic under the influence of predisposing factors, causing otitis and different clinical forms of dermatitis in domestic animals, mainly in dogs. The disease requires long treatments and/or high doses of antifungal agents and the recurrence is common. Commercial antifungal drugs have many disadvantages, such as high cost, side effects, low biological safety and induction of fungal resistance. *In vitro* resistance of *M. pachydermatis* to azoles has emerged recently, and the resistance to fluconazole is more commonly reported. New therapeutic alternatives for the control of these mycoses, presenting a broad spectrum of activity, fungicidal rather than fungistatic action, being safe and cost-effective are needed. In the present study, the susceptibility of *M. pachydermatis* strains to *Melaleuca alternifolia* essential oil and to fluconazole was evaluated *in vitro* using broth microdilution assay. A total of six *M. pachydermatis* strains obtained from dogs with dermatitis (3) and from dogs with otitis (3) were tested. All *M. pachydermatis* isolates were resistant to fluconazole, with MIC  $\geq 64$   $\mu\text{g/mL}$  and MFC  $> 64$   $\mu\text{g/mL}$ . *M. alternifolia* essential oil showed MIC values between 0,313 to 0,625 % (v/v) and MFC = 0,625 % (v/v). In conclusion, the *M. alternifolia* essential oil presented a significant antifungal activity against fluconazole-resistant *M. pachydermatis* clinical isolates. This essential oil can be tested in further studies on the control and treatment of malasseziosis.

**Keywords:** antifungal activity, canine dermatitis, canine otitis, tea tree.