

Antibacterial Effect of Tea-tree Oil on Methicillin-resistant *Staphylococcus aureus* Biofilm Formation of the Tympanostomy Tube: An *In Vitro* Study

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Abstract

The antibacterial effects of tea-tree oil against the formation of methicillin-resistant *Staphylococcus aureus* (MRSA) biofilm on the surface of the tympanostomy tubes was evaluated. Materials and Methods: Silicone tympanostomy tubes were pretreated with normal saline for 12 hours, the control group (n=4), with 100% tea-tree oil, experimental group A (n=3), or with 50% tea-tree oil, experimental group B (n=3). All the tubes were incubated in a MRSA solution for 2 days and then processed for evaluation using scanning electron microscopy. Results: The development of the biofilm mode of growth of MRSA was observed in the saline-treated control group. In contrast, only focal biofilms were present on the tube surface in experimental group A and considerable reduction of biofilm with destruction of the MRSA cells was shown in experimental group B. Conclusion: From these results, the antimicrobial effect of tea-tree oil against biofilm formation on tympanostomy tubes in vitro has been verified.

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