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.

In Vivo November 1, 2007 vol. 21 no. 6 1027–1030

http://iv.iiarjournals.org/content/21/6/1027.abstract