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> Burns. 2004 Dec;30(8):772-7. doi: 10.1016/j.burns.2004.06.006.

The effect of essential oils on methicillin-resistant Staphylococcus aureus using a dressing model

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Abstract

Patchouli, tea tree, geranium, lavender essential oils and Citricidal (grapefruit seed extract) were used singly and in combination to assess their anti-bacterial activity against three strains of Staphylococcus aureus: Oxford S. aureus NCTC 6571 (Oxford strain), Epidemic methicillin-resistant S. aureus (EMRSA 15) and MRSA (untypable). The individual essential oils, extracts and combinations were impregnated into filter paper discs and placed on the surface of agar plates, pre-seeded with the appropriate strain of Staphylococcus. The effects of the vapours of the oils and oil combinations were also assessed using impregnated filter paper discs that were placed on the underside of the Petri dish lid at a distance of 8mm from the bacteria. The most inhibitory combinations of oils for each strain were used in a dressing model constructed using a four layers of dressings: the primary layer consisted of either Jelonet or TelfaClear with or without Flamazine; the second was a layer of gauze, the third a layer of Gamgee and the final layer was Crepe bandage. The oil combinations were placed in either the gauze or the Gamgee layer. This four-layered dressing was placed over the seeded agar plate, incubated for 24h at 37 degrees C and the zones of inhibition measured. All experiments were repeated on three separate occasions. No anti-bacterial effects were observed when Flamazine was smeared on the gauze in the dressing model. When Telfaclear was used as the primary layer in the dressing model compared to Jelonet, greater zones of inhibition were observed. A combination of Citricidal and geranium oil showed the greatest-anti-bacterial effects against MRSA, whilst a combination of geranium and tea tree oil was most active against the methicillin-sensitive S. aureus (Oxford strain). This study demonstrates the potential of essential oils and essential oil vapours as antibacterial agents and for use in the treatment of MRSA infection.

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