

## Enhancing the in vitro activity of *Thymus* essential oils against *Staphylococcus aureus* by blending oils from specific cultivars

J. L. Caplin <sup>a\*</sup>, I. Allan <sup>b</sup>, G. W. Hanlon <sup>b</sup>

<sup>a</sup> School of Environment & Technology, University of Brighton, Brighton, BN2 4GJ, UK.

<sup>b</sup> School of Pharmacy and Biomolecular Sciences, University of Brighton, Brighton, BN2 4GJ, UK

### Abstract

The in vitro activity of a blend of essential oils derived from four UK grown cultivars of thyme (*Thymus zygis* L.) against two strains of methicillin-sensitive *Staphylococcus aureus* (MSSA) and two strains of epidemic methicillin-resistant *Staphylococcus aureus* (EMRSA) was examined, and the results compared to those obtained for an unblended linalool chemotype of thyme oil. The principal components of the thyme oil blend, designated 'Oil B' were thymol, linalool, terpinen-4-ol, and  $\alpha$ -terpinene. The oil blend exhibited significant inhibitory and bactericidal effects, as determined by disc diffusion assay, modified broth micro-dilution and time-kill studies. Oil B had mean MIC and MBC values of 0.3% and 0.6% (v/v) against the staphylococcal isolates compared to 0.4% and 0.8% (v/v) for the linalool chemotype thyme oil. Time-kill studies exhibited a decrease in viability of more than 3 log<sub>10</sub> cfu/ml within two hours using a final Oil B concentration of 5% (v/v). The results for the Oil B compare favourably to those for single linalool chemotype thyme oils, and the blend shows good in vitro potential for the treatment of MRSA colonisation.