Testing of glyceryl monoesters for their antimicrobial susceptibility and their influence in emulsions.

ABSTRACT

Natural anti-microbial agents have received great attention in the cosmetic preservation area due to their well-documented safety profile. The anti-microbial activities of palm-based glyceryl monoesters (monolaurin, monocaprylin and monocaprin) were compared with commercially available tea tree oil and potassium sorbate against Escherichia coli, Pseudomonas aeruginosa, Staphylococcus aureus and Aspergillus niger, using the anti-microbial susceptibility testing procedure. Monolaurin was found to exhibit excellent inhibitory activity against S. aureus and Asp. niger, whereas potassium sorbate and tea tree oil had no activity against Asp. niger and S. aureus, respectively. Monocaprylin was shown to have low inhibitory activity against E. coli, and no inhibitory activity towards P. aeruginosa. On the other hand, tea tree oil had a higher inhibitory activity than monolaurin at 2% against E. coli but showed no activity against P. aeruginosa. Similar trends were observed for monocaprin and monolaurin which showed no anti-microbial activity towards P. aeruginosa as well as E. coli. Interestingly, the presence of monolaurin was not only effective as a preservative, but was also found to induce the formation of liquid crystals at concentrations as low as 0.5%. The formation of liquid crystals is said to enhance the stability and functionality of cosmetic emulsions.

Keyword: Monolaurin; Monocaprin; Monocaprylin; Anti-microbial activity; Liquid crystals.