Rissa Ditnoi 2013: Development of Foot Deodorant Spray Product Containing Tea Tree Essential Oil. Master of Science (Agro-Industrial Product Development), Major Field: Agro-Industrial Product Development, Department of Product Development. Thesis Advisor: Assistant Professor Walairut Chantarapanont, Ph.D. 160 pages.

The objective of this research was to develop foot deodorant spray with tea tree essential oil as an antibacterial agent. According to the consumer survey (consumer target of 15-50 years old), the product concept was foot deodorant spray product added tea tree essential oil as antibacterial agent with colorless and cool fresh smell can reduce foot odor and be absorbed well without stickiness on foot skin. Then, chemical components and efficiency in inhibiting bacteria of tea tree essential oil from three distillation methods; water distillation, water with steam distillation and steam distillation were studied. Results showed that tea tree essential oil from all distillation methods were colorless and clear liquid. Water and steam distillation gave the highest yields (2.75%). But chemical components of tea tree oil from water distillation had the highest amount of terpinen-4-ol (41.37$\pm$1.07) and gave the lowest of minimum bactericidal concentration (MBC) at 2.56 mg/ml. Then, water distillation method was chosen to use for extract tea tree essential oil for this study. Developed foot deodorant spray contained 0.5% of tea tree essential oil, Deionized water 65.63%, Ethanol 26.78%, Solulan™ 75 lanolin (PEG-75 lanolin) 1.92%, Ethylene Diamine Tetreacetic Acid (EDTA) 0.03%, Menthol crystal 0.10% และ Aloe vera extraction 5.00% This product had viscosity of 7.88 cP, pH value of 6.5, color with L*, a* and b* values of 93.05, -0.65 and 7.85, respectively. Total colony count was less than 10 CFU/ml. *Staphylococcus aureus* Streptococcus spp. *Pseudomonas aeruginosa* and *Salmonella* spp. were not found in product. Coliform bacteria Escherichia *coli* and *Clostridium* spp. were less than 3 MPN/ml. This foot deodorant spray product could reduce bacteria on foot area at 99.74% after sprayed repeatedly on foot 3 times. The consumer acceptance test showed that 98.00% of consumer accepted the product and the final product had overall liking in the range of like moderately to like very much (7.16).

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