Formulation and Evaluation of Hair Shampoo Containing Tea Tree (Melaleuca alternifolia) Oil and Virgin Coconut (Cocos nucifera) Oil

ABSTRACT

Tea Tree oil (TTO) contains beneficial properties such as antibacterial, antimicrobial, antiviral and anti-fungal. Whereas, the medium chain fatty acids in Virgin Coconut oil (VCO) able to protect hair follicles from heat, restoring hair's moisture and other damage. This paper describes the physical properties of seven hair shampoo formulations containing differing amount of TTO and VCO. The essential oils (TTO) applied in these formulations were extracted from fresh tea trees using steam distillation method and the VCO was produced from fermentation of fresh mature kernel coconut. Gas Chromatography-Mass Spectrometry (GCMS) analysis was conducted to determine the essential oil components of TTO and fatty acid composition of VCO. The shampoo formulations were subjected to evaluation of several parameters namely organoleptic, pH, viscosity, total solid content, foam stability, and dirt dispersion. The results show that the TTO was composed of terpene hydrocarbons with terpinene-4-ol as the major component; meanwhile lauric acid is major component of VCO. All the shampoo formulations were acid-balanced with pH range between 6.23 – 6.43; total solid contents were between 29.92 – 35.61%; stable foaming with the same foam volume for 4 minutes and no dirt was observed. Rheological test showed formulation with 6% TTO (0% VCO) has pseudo-plastic behavior and relatively lower total solid content which are desirable attributes in hair shampoo. Overall, TTO- and VCO-containing shampoo formulations showed ideal physicochemical properties for hair cleansing and treatments.