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Development of an Aloe vera (*Aloe barbadensis*) Enriched Herbal Soap and Assessment of Physico-Chemical Properties and Consumer Preference

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Abstract

The soap has been playing a key role in personal hygiene practices in industries, service sector and households. The demand for hand washing soap is continuously increasing due to the recommendation of frequent hand washing as a safety precaution for Covid -19 pandemic. Numerous studies have been conducted to develop soaps with various herbal incorporations. Aloe vera has several medicinal properties including antibacterial, antiviral, wound healing, soothing effects *etc.* Food and non-food industries use black tea extract as natural coloring and lemongrass oil as a natural fragrant. The present study aims to develop a herbal soap by incorporating aloe vera gel, tea extract and citronella oil. The soap base was synthesized by saponification of coconut oil and NaOH at 40 °C. Scientific trial and error design was applied in value addition; the product was optimized with 8% w/w aloe vera gel for soothing effect, 4% w/w citronella oil as a fragrant agent and 4% w/w black tea extract as a coloring agent. The developed soap was kept for a setting time of 72 h at room temperature (32 °C) and visual product quality was evaluated by referring to colour, aroma, texture, washing quality and soothing effect. The density, NaOH ratio, free alkali content and total fatty matter (TFM) (SLS 34:2009) were analyzed. Consumer preference was evaluated through an evaluation panel. The soap had a brownish golden colour, a soft consistent texture, a pleasant-mild aroma and soft soothing effect on hands. The density, NaOH ratio, free alkali content and TFM values were 0.95 mg/ml, 4.16, 0.007 mol/dm³ and 79.6%, respectively, which are compiled with general soap formulations and previous studies. According to TFM value, developed soap was classified as grade 1, which is associated with high quality and less hardness. The product has received a consumer preference of 8.65/10 mean rank value with the acceptance of 96% of panelists with favorable comments on soft and soothing washing quality. The finding of the study demonstrated the potential use of natural herbal soap as a hand washing soap. It is suggested to carry out competitor evaluation and standard quality evaluation prior to commercialization of the soap.

Keywords: Citronella oil, Hand washing, Natural colors, Natural fragrant, Tea

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