FORMULATION OF NATURAL LIQUID SOAP WITH CAROTENOIDS FROM PALMYRAH FRUIT (*Boraasus flabellifer* L.) PULP AND ROCK SALT

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ABSTRACT

Palmyrah (*Borassus flabellifer*) fruit pulp is a rich source of carotenoids which are oil soluble antioxidants capable of scavenging free radicals. Further, it contains saponin which can act as a detergent. Therefore, this study was carried out to investigate the potential of utilizing palmyrah fruit pulp in developing a natural skin nourishing liquid soap. A solvent mixture was prepared by mixing two parts of 80 % aqueous glycerol with one part of cold pressed virgin coconut oil (v/v). Carotenoids from palmyrah fruit pulp was extracted by macerating one part of palmyrah fruit pulp with ten parts of solvent mixture (w/v). Water extracts of red-coloured *Ixora* petals, lemon peel and soapberry drupes were prepared. Different formulations of liquid soaps were prepared using pigment extracted oil and different combinations of Ixora, lemon, soap nut and jasmine water extracts and cinnamon oil. Rock salt, Potassium hydroxide and distilled water were the other ingredients used in the preparation of liquid soap. Liquid soap made from pure coconut oil was used as the control. Sensory parameters; texture, colour, aroma, touch, formability, washing ability, feel after washing, dirt removing ability and overall acceptability of soap sample were evaluated by 30 untrained panelists using 7 points hedonic scale. Physicochemical parameters such as pH, lather volume, total fatty matter and total free alkali were determined according to the methods described in SLS standard for liquid soap. As per the results of sensory evaluation, the formulation consisted of pigment oil (46%), rock salt (3.5%), potassium hydroxide (7.0%), distilled water (20.0%), soapberry extract (20%) and jasmine essential oil (3.5%) was selected as the best. pH, lather volume, total fatty matter content and total free alkali content of the best liquid soap formulation were 9.75$\pm$ 0.31, 415.01$\pm$ 4.11 ml, 48.99 $\pm$0.80 % and 0.75 $\pm$0.05 g/L respectively.

The best liquid soap formulation had the highest total fatty matter. Never the less, as compared to the control, the best liquid soap formulation was not significantly different in pH, lather volume and total free alkali content. Both formulations comply with the SLS standards requirements for liquid soap. Further studies on antioxidant and antibacterial activities of this liquid soap will be useful to promote it as a skin nourishing cosmetic product.

Keywords: Palmyrah fruit pulp; Liquid soap; natural; skin nourishing