Fabrication & Characterization of a Novel Soap Material Based on the selected Value-Added Sri Lankan Clay Minerals with Extracted Saponin from Dry Fruit of *Sapindus emerginata*

N.T. Delpechithra, E.P.N. Premarathne and H.M.J.C. Pitawala*

Department of Science and Technology, Uva Wellassa University, Sri Lanka
**Corresponding Author E-mail: jagath@uwu.ac.lk, TP: +94711121134*

Soap referred to as stain removal material as a result of a saponification reaction between lye solution and fat/oil. In some soap industries clay minerals are used as a filler material which facilitate the structure and riser attribute of soap. Instead of that these clay minerals have the ability to remove stain and exfoliate the dead skin and act as a moisturizer. There are many clay types that can be found locally which are related to kaolin. However, those clay types do not showcase some qualities such as anti-bacterial effect, anti-fungal effect, moisturizing effect, foaming effect related to skin care. Therefore, those natural clay types have not been used previously for cosmetic purposes. Under this investigation, a non-ionic natural bio surfactant called saponin which was extracted from the dry fruit of *Sapindus emerginata* (soapnut) was used to improve above mentioned lacking qualities. Saponin makes skin soft and acts as moisturizing agent, gentle foaming agent, natural exfoliant, and very good anti- fungal and anti-bacterial agent. Four clays were used for this investigation. Except montmorillonite clay, other three were obtained from different areas of Sri Lanka i.e; kaolin clay from Meetiyagoda, *kirimati* from Kandy, *Makulu* clay from Wadduwa. From each clay type, three samples were prepared by varying the clay amount as 2g (6.7 wt%), 4g (13.3 wt%) and 6g (20 wt%) by maintaining the temperature of the solution as 30 °C in order to find out the best clay species for soap production. Each of the sample were tested for the TFM value, total alkalinity content, moisture content, foam height and pH value. These values were compared with the international standards of soaps. Almost all the parameters of prepared soap samples were within the standard ranges. As per the results, Meetiyagoda clay and *Makulu* clay were the best clays for soap production and the best composition is 20 wt% which contain 6g of clay.

Keywords: Kaolin; *Sapindus emerginata*; saponin, montmorillonite; Saponification