

Soap Production Using Locally Available Alkaline Extract from Millet Stalks: A Study on Chemical and Physical Properties of Soap

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Abstract

An agricultural by-product namely millet stalks were examined for their potential as an alternative source of potash for soap production. The alkaline extract was used in the preparation of soap using the traditional method. These materials were ashed and the sample was subjected to hot aqueous extraction. Extract from the crushed samples was characterized by its inorganic elements calcium, sodium, potassium, and magnesium. The resulting soap was subjected to physicochemical test; saponification value, iodine value, acid value, ash content, color, texture and the results were; 74mg/KOH/g, 31.72g/100g, 5.64mg/KOH, 1%, white, hard and rough, respectively. This showed that the white color of soap was a result of bleaching of the oil sample and the hardness of the soap was due to the presence of high concentration of K^+ ions in the prepared soap. Also, emulsification test was performed and the result was positive. White soluble precipitate was formed with KCl, NaCl, and NH_4Cl solution while with $CaCl_2$, $MgCl_2$, and $FeCl_3$ solution white gelatinous precipitate was formed which gave the insoluble complex with water. This research showed that some agricultural by-products such as millet stalks can be utilized for the traditional soap production.

Keywords: *soap, alkaline extract, millet stalks, traditional method, physicochemical*