

ABSTRACT

Baccaurea motleyana hook f., or rambai as it is locally known, contains two AHAs, DL-malic and L(+)-tartaric acid, in its fruit. The AHAs were identified and their contents determined by HPLC. The extract from the fruit is translucent and mildly yellow, which makes it suitable for cosmetic products. It behaves like a Newtonian liquid with a pH of 2.95 and is stable between 4°C and 25°C (RT).

The objective of this study was to produce a stable emulsion containing AHAs for skin whitening and hydration. Basic emulsions were made with different (two) emulsifiers, emollient, stearic acid, preservative, perfume and water. The basic emulsions with active ingredients were analysed for their physical properties such as appearance, viscosity, rheology and storage stability. The higher the actives content used, the lower were the pH and viscosity, resulting in greater instability of the system. An emulsion with 15wt/wt% active ingredients at pH 4.22 was the best compromise, giving good stability with a viscosity of over 12,000 cps. An initial attempt to increase the actives to 20wt/wt% resulted in unacceptable stability from its lowered acidity. The pH of the system was then maintained at 5.6 using a citrate buffer system allowing more active ingredients to be used. With the buffering in the system, more stable products were produced exhibiting high yields and thixotropic values reflective of strong networks formed.

A group of 36 in three age groups (21-30 years, 31-40 years and 41-50 years) was used in the instrumental evaluation. The colour of skin (L^* , a^* , melanin and erythema), its pH and hydration showed greater changes after applying the product containing 15wt/wt% extract for 4 weeks than the placebo. Of the six parameters, the most effective by the local AHAs was the exfoliation.

The t-test showed that the skin colour and hydration on the cheek and t-zone were significantly improved over the placebo at $p = 0.05\%$. No significant difference was detected for skin pH for the age groups at 21-30 and 31-40. ANOVA and Duncan's test confirmed that the differences in the age groups for all the variables were significant at $p = 0.05$ level.

In sensory evaluation, the group showed 56% overall acceptance of the product in terms of physical properties, after rubbing effect and effectiveness after 4 weeks application, the same rating obtained for the commercial sample. However, 20% of them experienced itchiness, stinging and tightness after only 30 minutes application.