

Abstract

The aim of this study is to research and develop facial skincare products for men containing highland plant extracts as active ingredients. The highland plants that involved pharmaceutical activities were selected and extracted. Their extracts were tested antioxidant, anti-tyrosinase, anti-elastase, and anti-collagenase activities. After that, the good plant extracts were selected as the active ingredients for preparation of men's skincare products: day and night serums. The obtained serums were studied stability test at different storage conditions for 60 days as well as heating and cooling condition for 5 cycles. They were characterized appearance, centrifuge test, pH, viscosity and rheology profile, internal droplet size, and zeta potential of internal droplet. The formulations were also re-investigated the pharmaceutical activities. After that, irritation test of selected serums was carried out with 20 male volunteers per formulation. In the literature of pharmaceutical activities from the highland plants, tea plant (*Camellia sinensis* (L.) Kuntze var. *assamica* (Mast.) Kitam.), Gac fruit (*Momordica cochinchinensis* (Lour.) Spreng.), horsetails (*Equisetum debile* Roxb.), Ta khrai ton (*Litsea cubeba* Pers.), Ma Khaen (*Zanthoxylum limonella* Alston), and avocado (*Persea americana* Miller) were selected to investigate the pharmaceutical activities. Catechin from tea plant and Ma Khaen presented the best result of anti-tyrosinase and anti-elastase activities. Catechin from tea plant also showed excellent antioxidant and anti-collagenase activities. Furthermore, Gac fruit and avocado were also added in the products to increase the pharmaceutical activities of both selected highland plant extracts. These four selected highland plant extracts were further used as active ingredients of day and night serums. The obtained day serum appeared light brown color, whereas the night serum was light yellowish formulation due to the different of composition in each formulation. The serums found pleasant scent from Ma Khaen and male fragrance. No phase separation was found after centrifuge test. pH value was 5.5-6.5. Rheology profile of all formulations performed non-Newtonian flow (pseudoplastic) with viscosity value in range of 1.10-1.66 Pas. The average internal droplet size was 3.88-1.94 μm , zeta potential of internal droplet was -30.0 to -40.7 mV. Both day and night serums showed no changes in appearance after storage at different storage conditions. They also presented good pharmaceutical activities. No irritation was found in the male volunteers. Both formulations are well accepted by all male volunteer. The cost of ingredient of accepted day and night serums are 43.50 and 75.47 Baht/100 gram, respectively.