

EFFECT OF HYDROXYPROPYL METHYLCELLULOSE (HPMC) AND PROPYLENE GLYCOL ON THE PENETRATION RATE OF XANTHONE RICH FRACTION EMULGEL PREPARATION

Xanthone Rich Fraction (XRF) derived from mangosteen rind (*G. mangostana* L.) contains α -mangostin possessed antioxidant property. It may be used to prevent aging (anti-aging). Xanthone rich fraction is formulated into an emulgel preparation with the addition of chemical penetration enhancer propylene glycol. This study aims to analyze the effect of hydroxypropyl methylcellulose (HPMC) and propylene glycol on the physical characteristics and penetration rate of xanthone rich fraction emulgel. Four different formulations of emulgel were prepared, F1 (without HPMC and propylene glycol), F2 (containing propylene glycol), F3 (containing HPMC), and F4 (containing HPMC and propylene glycol). The physical evaluation of xanthone rich fraction emulgel included organoleptic, homogeneity, pH, viscosity and rheology, spreadability and cycling test. The penetration test was carried out with Franz diffusion cells using Whattman No.1 membrane and a combination of phosphate buffer pH 7.4 with methanol as the compartment medium. Physical evaluation showed that HPMC reduced the homogeneity and spreadability then increased the viscosity of the emulgel. Propylene glycol reduces the pH value and viscosity then increases the spreadability of the emulgel. Penetration test of xanthone rich fraction emulgel showed that the amount of α -mangosteen of the four formulas at 360 minutes was 228.22 g/cm²; 251.06 g/cm²; 832.04 g/cm² and 1032.01 g/cm² in the order F4>F3>F2>F1. The flux of α -mangosteen of the four formulas at the 360 minute in a row was 38.03 g/cm².hour; 41.84 g/cm².hour; 138.67 g/cm².hour; and 172 g/cm².hour in the order F4>F3>F2>F1. HPMC can provide sustained release to extend the therapeutic effect, while propylene glycol can increase the amount and penetration rate of α -mangostin by softening the keratinin layer on the stratum corneum.

Keywords: α -Mangosteen, emulgel, HPMC, penetration, propylene glycol