ABSTRACT

COMPARISON STUDY OF PHYSICAL STABILITY AND PENETRATION APMS IN NLC, SLN AND NANOEMULSI (Combination of Solid Lipid Oleum Cacao-Beeswax and Liquid Lipid Olive Oil)

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p-methoxycinnamic acid (APMS) is a topical anti inflammation drug which has low solubility in water so a nanoparticle size lipid based colloidal dispersion delivery system such as Nanoemulsi, SLN and NLC used to delivered the drug to the site of action. The objective of this study was to find out which is more influential on effectiveness of APMS so the penetration test are carried out on rat skin and to determine the system's resilience, physical stability tests are carried out in the NLC, SLN and Nanoemulsion systems where a combination of oleum cacao-beeswax as solid lipid and olive oil as liquid lipid. The physical stability test were carried out on the thermal cycling test and centrifugation test based on colour, odor, consistency and separation. The results showed that NLC APMS more stable than SLN APMS and Nanoemulsion APMS. In this study, Nile Red was used as fluorescence label in NLC, SLN, and Nanoemulsion. This study was conducted by applying fluorescence label on rat skin during 30 minutes and 2 hours. The interaction between fluorescence labeled NLC, SLN and Nanoemulsion in the rat skin was visualized by fluorescence microscopy. Based on penetration depth test , the result showed NLC APMS > Nanoemulsion APMS > SLN APMS. The penetration depth at 2 hour was deeper than the penetration depth at 30 minute. Based on intensity fluorescent ,NLC APMS showed the highest

fluorescence intensity than SLN APMS and Nanoemulsion APMS. Penetration of NLC APMS was deeper and more than SLN APMS. This could be a contribution from liquid lipid, that is olive oil as enhancer on NLC APMS. Penetration of NLC APMS was deeper and more than Nanoemulsion APMS, because occlusivity of NLC APMS was greater than Nanoemulsion APMS.

Keyword (s) : APMS, *NLC, SLN, Nanoemulsion, Physical Stability, Penetration, Rat skin, Fluorescence microscope, Nile red*