ABSTRACT

IRRITATION TEST OF RETINOIC ACID IN NANOEMULSION (VCO : Tween 80 & Span 80 – Etanol 96% : Phosphate Buffer pH 6,0±0,5 = 1: 9 : 27,5) COMPARED TO CONVENTIONAL EMULSION

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Retinoic acid is a compound that has effect to prevention and treatment of wrinkles due to photo-aging, acne, and inflammation of the skin (Suggs et al., 2014). In higher concentration of retinoic acid usage will increase its side effect such as irritations (Griffiths et al., 1995).

The purpose of this study was to determine score irritation caused by retinoic acid in nanoemulsion compared with its in conventional emulsion. The method used is Draize Patch Test with male albino rabbits as experimental animals. The composition of nanoemulsion (Erawati et al., 2014) modified consists of virgin coconut oil (2.66%); Span 80 (1.92%) and Tween 80 (18.66%); ethanol 96% (3.42%); and a solution of phosphate buffer pH 6.0 ± 0.5 (73.34%). While the emulsion composition using virgin coconut oil (33%), Tween 80 (7.6%), Span 80 (14.4%), and a solution of phosphate buffer pH 6.0 ± 0.5 (45%). Retinoic acid loaded in both systems amounted 0.01%.

The results of the study, showed that irritation scores caused by retinoic acid in nanoemulsion (1.67) greater than its in conventional emulsion (1.56), but both are still in the same category, named “slight irritant” (ISO 10993-10, 2002). This is caused by nanoemulsion has a very small droplet size that can increase the penetration of active ingredients (Chime et al., 2014) including retinoic acid, so that its side effects are also slightly increased. Conclusion, retinoic acid 0.01% in nanoemulsion and conventional emulsion caused slight irritation.

Keywords: irritation test, nanoemulsion, conventional emulsion, retinoic acid.