Formulasi, pengaruh silikon terhadap penetrasi secara in vitro menggunakan sel difusi franz dan uji stabilitas fisik sediaan emulgel niasinamida = Formulation, effect of silicon toward in vitro penetration using franz diffusion cell and physical stability test of niacinamide gel emulsion

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Abstrak

Niasinamida merupakan vitamin yang larut di dalam air dikenal sebagai vitamin B3 dan telah digunakan untuk mengobati beberapa jenis permasalahan pada kulit. Penelitian ini bertujuan untuk membuat formulasi emulgel yang menggunakan silikon untuk membandingkan daya penetrasi secara in vitro antara emulgel dengan silikon dan tanpa penambahan silikon serta uji stabilitas fisik sediaan. Semua formulasi di uji daya penetrasinya secara in vitro dengan sel difusi Franz menggunakan membran abdomen tikus betina galur Sprague dawley. Jumlah kumulatif niasinamida yang terpenetrasi dari emulgel yang tidak mengandung silikon (F1) adalah 2028,8 ± 64,3 µg/cm2 sedangkan emulgel yang mengandung silikon secara berturut turut (F2-dimetikon dan F3-siklometikon) adalah 4662,4 ± 11,4 µg/cm2 dan 2679,45 ± 9,3 µg/cm2. Nilai fluks berturut-turut F1, F2, dan F3 adalah 253,6 ± 8,0 µg/cm2jam, 582,7 ± 1,4 µg/cm2jam, dan 334,93 ± 1,2 µg/cm2jam. Serta nilai % kumulatif terpenetrasi berturut-turut sebesar 8,89 ± 0,28 %, 17,95 ± 0,04 %, dan 11,83 ± 0,04 %. Berdasarkan hasil tersebut, dapat disimpulkan bahwa adanya silikon terbukti dapat meningkatkan penetrasi emulgel niasinamida dan ketiga formulasi menunjukan kestabilitan fisik yang baik.
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Niacinamide is a water-soluble vitamin, also known as vitamin B3 and has been used to treat several types of dermatological pathologies. The purpose of this research are to make emulgel formulations using silicones to compare the penetration ability as in vitro test between emulgel with or without silicon, and the physical stability test. Penetration ability of all formulations were examined by Franz diffusion cell as in vitro test using Sprague Dawley rat abdomen skin for diffusion membrane. Total cumulative penetration of niacinamide from emulgel without silicone formulation (F1) is 2028,8 ± 64,3 µg/cm2 and emulgel with silicone formulation (F2-dimethicone and F3-cyclomethicone) are 4662,4 ± 11,4 µg/cm2 and 2679,45 ± 9,3 µg/cm2. Fluks of niacinamide respectively (F1, F2, and F3) are 253,6 ± 8,0 µg/cm2hour, 582,7 ± 1,4 µg/cm2hour, and 334,93 ± 1,2 µg/cm2hour. The presentage of penetrated niacinamide are 8,89 ± 0,28 %, 17,95 ± 0,04 %, and 11,83 ± 0,04 %, respectively. Based on those result, it can be concluded that silicone compound can increase the penetration ability of niacinamide emulgels and all formulations showed good physical ;Niacinamide is a water-soluble vitamin, also known as vitamin B3 and has been used to treat several types of dermatological pathologies. The purpose of this research are to make emulgel formulations using silicones to compare the penetration ability as in vitro test between emulgel with or without silicon, and the physical stability test. Penetration ability of all formulations were examined by Franz diffusion cell as in vitro test using Sprague Dawley rat abdomen skin for diffusion membrane. Total cumulative penetration of niacinamide from emulgel without silicone formulation (F1) is 2028,8 ± 64,3 µg/cm2 and emulgel with silicone formulation (F2-dimethicone and F3-cyclomethicone) are 4662,4 ± 11,4 µg/cm2 and 2679,45 ± 9,3 µg/cm2. Fluks of niacinamide respectively (F1, F2, and F3) are 253,6 ± 8,0 µg/cm2hour, 582,7 ±

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