

Sun Protection Factor (SPF) Determination of Sericin Cream and Niosomal Gel

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Abstract : Background: Sericin is a protein extracted from silk and has antioxidant, antimicrobial, antineoplastic, wound healing and moisturizing properties. Different cosmetic formulation of sericin is available in different countries such as Japan and the other south-eastern Asian countries. We formulated and evaluated the sunscreen properties of topical formulations of sericin by an in vitro method. Method: Niosomes composed of sorbitan palmitate (Span 40), polysorbate 40 (Tween 40) and cholesterol (300 μ mol, 3.5:3.5:3 molar ratio) were prepared by film hydration technique. Sericin was dissolved in normal saline and the lipid hydration was carried out at 60°C and the niosomes were incorporated in a Carbomer gel base. A W/O cream was also prepared and the release of sericin was evaluated by using Franz diffusion cell. Particle size analysis, sericin encapsulation efficiency measurement, morphological studies and stability evaluation were done in niosomal formulations. SPF was calculated by using Transpore tape in vitro method for both formulations. Results: Niosomes had high stability during 6 months storage at 4-8°C. The mean volume diameter of niosomes was less than 7 μ m which is ideal for sustained release of drugs in topical formulations. The SPF of niosomal gel was 25 and higher than sericin cream with a diffusion based release pattern of active material. Conclusion: Sericin can be successfully entrapped in niosomes with sustained release pattern and relatively high SPF.

Keywords : sericin, niosomes, sun protection factor, cream, gel

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