# Antiinflammatory sunscreen nanostructured lipid carrier formulations.

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**Abstract**

Discoid lupus erythematosus is a condition of chronic inflammation of the skin which requires protection from ultraviolet radiations and prolonged treatment with topical corticosteroids.
The aim of this study was to prepare semisolid nanostructured lipid carrier (NLC) formulations containing diflucortolone valerate (DFV) as a model corticosteroid drug and titanium dioxide (TiO2) as an inorganic UV-filter in the same formulation. The NLC formulations were prepared by applying high shear homogenization and ultrasonication techniques using PrecriolÈATO5 or TristearinÈ as the solid lipids, CapryolÊ or isopropyl myristate as the liquid lipids, PoloxamerÈ 407 as a surfactant and LabrafilÈ M1944CS as a lipid based surfactant.
The incorporation of TiO2 in the NLCs in concentration of 5% w/w was found to be the optimum concentration which enhances the intrinsic sun protection factor (SPF) of this carrier system and resulted in suitable sun protection values ranged from 4.94 to 21.27 with an acceptable spreadable consistency for the NLC formulation. Semi-solid NLC formulations were characterized by small particle size ranged from 180.8 to 255.1 nm before the addition of TiO2 and the particle size reached 540.1 nm after addition of 5% TiO2.
Incorporation of TiO2 in NLC formulations leads to a synergistic photoprotection and increase patient compliance.

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