Antiinflammatory sunscreen nanostructured lipid carrier formulations.

Seham Elkheshen, HUSSEIN OSMAN HASSAN AMAR, AZZA AHMED MOHAMED MAHMOUD , Fatma S.Abdel-Salam

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 wnvtcuqpkecvkqp"vgejpkswgu"wukpi"Rtgetkqn Ì CVQ5"qt"Vtkuvgctkp Ì "cu"vjg"uqnkf"nkrkfu." Capryol Î "qt"kuqrtqr {n" o {tkuvcvg"cu"vjg"nkswkf"nkrkfu."Rqnqzcogt Ì "407 as a uwthcevcpv"cpf"Ncdtchkn Ì "O 1944CS 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. Semisolid 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.

Journal of Drug Delivery and Science Technology 2017, February