

Formulation and evaluation of physicochemical properties of buccoadhesive tablet containing solid lipid nanoparticles (SLN) of triamcinolone acetonide

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Background and Aims: Aphthous ulcers are painful sores in the mouth. At least 10–25% of the population suffers from it. Some treatments like topical corticosteroids can reduce the severity of its clinical presentation. Triamcinolone acetonide dental Paste (Adcortyl®) and buccal tablet are two dosage forms of triamcinolone acetonide that nowadays are available in the world. This present study was designed to formulate the buccoadhesive tablet of triamcinolone acetonide as SLN and then evaluate its physicochemical properties.

Methods: High shear homogenization and ultrasound method were used to produce SLNs. They were characterized and then lyophilized. Tablets were prepared by direct compression method. Polymers used in the formulations were Carbopol 934P, Chitosan, HPMC K4M and HPMC K15M. The tablets were tested for weight variation, hardness, surface pH, drug Content uniformity, swelling index, bioadhesive strength and in-vitro drug release study.

Results: The mean particle size of SLNs was 248nm and encapsulation efficacy was 86%. Fourier transform infrared spectroscopy (FTIR) studies showed no evidence on interaction between drug, excipients and polymers. Formulation F2 containing Carbopol 934P and HPMC K4M showed good bioadhesive force and maximum drug release of 96.77% in 10 hours. The surface pH of all tablets was close to buccal pH, hence no irritation would observe with these tablets. It was observed that the optimized formulation follows korsmeyer-peppas release kinetics.

Conclusions: SLNs containing triamcinolone acetonide were successfully prepared by High shear homogenization and ultrasound method. It can be expected that using SLN can improve the penetration of triamcinolone acetonide, so this buccal tablets would be more effective than other dosage forms of this drug.

Keywords: Triamcinolone acetonide; Formulation; Buccoadhesive; SLN