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Dissolution enhancement of Aceclofenac tablet by solid dispersion technique

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The study was carried out to enhance the dissolution rate of poorly water soluble drug Aceclofenac (BCS-II), by solid dispersion technique using different carrier and super disintegrant by Kneading method. Design of Experiment performed for screening of carrier and super disintegrant that has better effect on dissolution was Plackett Burman Design. Carriers that were chosen for the study include hydroxypropyl beta cyclodextrin, premix of lactose and maize starch and mannitol. Similarly for superdisintegrant sodium starch glycolate, croscarmellose and crospovidone were selected. Among the carriers and superdisintegrants, mannitol and crospovidone showed best effect on dissolution. For optimization of concentration of mannitol and crospovidone in solid dispersion, central composite design was applied for two factors at two levels which gave 13 formulations. Tablets were prepared and evaluated for physicochemical properties. Response surface plot and contour plot were drawn and an optimum formulation was selected. This formulation contained 114.14 mg of mannitol and 10.5 mg crospovidone. The *in vitro* dissolution studies of optimized formulation CCDF8 and marketed product was carried out in USP Type II apparatus at different time interval of 5, 15, 30 and 45 minute at 50 rpm in phosphate buffer, pH 7.5 (0.33M mixed). Solid state characterization was evaluated by FTIR. It showed that the drug was stable in solid dispersion. Hence, Solid dispersion technique can be successfully used for the improvement of the dissolution profile of Aceclofenac.

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Nanoemulsion containing *Sargassum* extract as anti-aging cosmeceutical

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Ageing process can be prevented by using effective cosmeceutical with antioxidant and sun protecting activity. Recently, we found that ethanol extract of brown algae *Sargassum* spp., has anti-oxidant and sun protecting activity. Nanoemulsion loaded with *Sargassum* spp., was investigated its physical properties after storage for three months. Antioxidant activity was measured by using DPPH assay, sun protecting activity was also shown by measurement of sun protection factor (SPF). The *in vitro* skin permeation study was also done. Skin irritation test, clinical evaluation for skin moisturizing effect and skin elasticity were performed in 30 healthy persons. The results showed that the nanoemulsion was physically stable, and also exhibited antioxidant activity and sun protecting activity. From the *in vitro* permeation test, flavonoid compound was mostly remained in stratum corneum, viable epidermis and dermis rather than in blood circulation which was related to cosmetic purpose. From clinical studies we showed that the skin hydration and elasticity were significantly increased after using the nanoemulsion containing *Sargassum* extract. Our results strongly indicated that nanoemulsion containing *Sargassum* extract was a promising anti-aging cosmeceutical.

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