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Formulation, Characterization and *In vitro* Evaluation of Cellulose Acetate Microspheres for Anti-diabetic Drug: Voglibose

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ABSTRACT

The objective of the current investigation is to reduce dosing frequency and improve patient compliance by designing and systematically evaluating sustained release microspheres of Voglibose. Frequent administration and variable low bioavailability after oral administration are problems of conventional dosage forms of voglibose can be attenuated by designing it in the form of sustained release microspheres which would delay the residence period at the absorption place to help intimate contact with the absorption surface and thereby improve and enhance the bioavailability. Voglibose-loaded cellulose acetate emulsified microspheres were successfully prepared by emulsification solvent evaporation technique with a maximum incorporation efficiency of 94.5±0.05%. The scanning electron microscopic reading indicated that the microspheres were round in shape and the drug remained dispersed in the polymer matrix at amorphous state, which was further confirmed by DSC analysis. The *in-vitro* test indicated that the microspheres had good sustained release properties. The *In-vitro* was faster at simulated intestinal fluid (phosphate buffer, pH 7.4) than that at simulated gastric fluid (0.1 M HCl, pH 1.2). The *in vitro* drug release mechanism was follow Zero order Kinetic and controlled by swelling and relaxation of polymer. There was no major change in drug content and cumulative drug release of drug-loaded microspheres stored at different storage condition after 90 days of study.

Key Words: Voglibose, Microspheres, Antidiabetic drug, Cellulose acetate, *In-vitro* studies