ABSTRACT

Aim: To prepare the microspheres of nifedipine for control release.

Nifedipine, a nitro-dihydropyridine and potent systemic calcium channel antagonist, is used in the management of angina pectoris and hypertension. It is highly crystalline and poorly soluble in water. Its absorption, dissolution rate dependent are low when administered orally in solid dosage forms, it has a shorter elimination half-life (2.0-5.0 h), oral bioavailability is 30-60%. Dose range is 30-90 mg/day. The present investigation is concerned with design of microspheres of nifedipine with reduced dose, which after oral administration were designed to prolong the time of release and thus to increase the bioavailability of the drug and its half life.

Method: Nifedipine microspheres were prepared by emulsion-solvent evaporation technique. In this dosage form, hydrophobic water impermeable polymer ethyl cellulose and polymethacrlates were used for controlling the release of drug. Drug polymer compatibility studies by FTIR gave confirmed about the drug purity and found no interaction between the drug and polymer .The surface topography was characterized by SEM. The formulations were evaluated for particle size, % yield, % DEE, angle of repose, bulk density and *in vitro* drug release study. The dissolution profile of various formulations was fitted to zero order and higuchi model to ascertain the drug release. The results obtained from the above were found satisfactory for all formulation. The best formulation exhibited a high drug entrapment efficiency of 86.68%. The drug release studies were also sustained for more than 12 h. Two months accelerated stability study was carried out for the best formulation.

Key words: Nifedipine, Microspheres, Emulsion-solvent evaporation technique.