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Formulation and evaluation of pH sensitive nanoparticles for colon targeted drug delivery system

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Targeted delivery to the colon is being explored not only for local colonic pathologies but also for systemic delivery of drugs like proteins and peptides, which are otherwise degraded and/or poorly absorbed in stomach and small intestine but may be better absorbed from the more benign environment of the colon. The aim of the work was to develop and characterize pH sensitive nanoparticle systems based on Eudragit P- 4135F and Hydroxy Propyle Methyl Cellulose- Acetate Succinate (HPMC-AS) polymers for the colon targeted drug delivery of Metoprolol succinate. For this purpose, nanoparticles (NPs) with the enteric coating properties of Eudragit P-4135F and HPMC-AS were prepared by quasi-emulsion solvent diffusion technique and evaluated. Metoprolol is water soluble and get absorbed in the colon was used as a model drug. The NPs prepared showed homogeneous size distribution, mean diameters between 161- 826 nm, a negative net charge -16.8 to -13.8 mV and spherical morphology. Solid state FT-IR studies suggest that no evidence found regarding the information on possible interaction between drug and polymers. The suitability of Eudragit-P4135F and HPMC-AS NPs for the release of metoprolol succinate was studied by *in-vitro* release at pH 1.2 and pH 6.8 which represent the approximate pH values of the stomach and colon in which the nanoparticles formulation showed drug release 0% at pH 1.2 and 94.34% at pH 6.8. It may be concluded that Eudragit-P4135F and HPMC-AS can be used to prepared nanoparticles which have enteric coating properties and also targets the drug to the colon.

Biography

Sharadendu Mishra is M. Pharm. pursuing student at Amity University (Noida) and carrying out his research project at Institute of Nuclear Medicine & Allied Sciences, DRDO, Delhi. He has graduated from Institute Of Technology and Management affiliated to Uttar Pradesh Technical University, Lucknow. He also holds a post graduation diploma degree in Pharmaceutical Regulatory Affairs from Jamia Hamdard University, New Delhi. He undertook a training program for one month at Zydus Cadila Healthcare Ltd., Ahmedabad.

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