COLON TARGETED DRUG DELIVERY SYSTEM OF CAPECITABINE FOR TREATMENT OF COLORECTAL CANCER

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Abstract:

Colorectal cancer as the common malignant tumor in digestive tract is seriously threatening the health of human beings. With the development of medicine, current treatment for colorectal cancer has gradually diversified. Targeted therapy is a kind of therapy that combines therapy drug with drug carrier system, delivering the drug to specific target organs to play the curative effect under the function of specific-oriented mechanism. Capecitabine is an orally-administered chemotherapeutic agent used in the treatment of numerous cancers. It has been used in the treatment of colorectal, breast, gastric and oespphageal cancer. The purpose of present investigation was to develop colon targeting tablet of capecitabine for colorectal cancer targeting. Capecitabine is anti-metabolite which enzymatically convert to 5-flurouracil by two step in present of enzyme cytidine deaminase and thymidine phosphorylase. Fourier transform infrared spectroscopy (FTIR) and Differential scanning calorimetry had employed to study drug-excipients incompatibility. Capecitabine colon targeted tablets were prepared using wet granulation method. Optimization of formulation was done by 3^2 full factorial design using Design Expert software. The pre-formulation study shows that neither drug nor any excipients interact with each other. Different pre-compression and post compression parameters had been

carried out to optimize the formulation. In-Vitro drug dissolution and bio-relevant drug dissolution study were carried out which shows 98.835 ±0.390% and 97.650±0.652% after 345 min. drug release at colonic pH. Bio-relevant drug dissolution study was carried out for comparison with marketed product which demonstrates that colon targeting tablet had good drug dissolution compared to marketed product. Stability study shows Colon targeted capecitabine tablet was stable at accelerated condition. The present study demonstrated that Colon targeted capecitabine tablet is suitable for colon targeting drug delivery and had great potential for targeting colorectal cancer.

KEY WORD: Colorectal cancer, Capecitabine, Colon targeting Drug Delivery, methyl Acrylate copolymer, Super-disintegrating agent.