

Preparation and characterization of sustained release form of capecitabine and its effect on cancer cell line

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Background and Aims: Gastrointestinal disturbances such as nausea and vomiting are considered amongst the main adverse effects associated with oral anticancer drugs due to their fast release in the GIT (gastro-intestinal track). Sustained release formulations with proper release profile can overcome some side effects of conventional formulations.

Methods: The current study was designed to prepare sustained release tablets of capecitabine (An FDA (Food and Drug Administration) approved drug for advanced breast cancer) using hydroxy propyle methylcellulose (HPMC), carbomer, sodium alginate and sodium bicarbonate. Tablets were prepared using wet granulation method, characterized and their in vitro cytotoxicity against cancer cell line was investigated.

Results: The sustained release tablets showed good hardness and passed the friability test. Tablets floating lag time were determined to be 5-10 min, floated more than 20 h and releasing drug for 20 h. Capecitabine sustained release form demonstrated efficacy on cancer cell as compared to immediate form when tested using microtetrazolium viability assay.

Conclusions: Based on these findings, that sustained release formulation of anticancer drugs could overcome on GIT side effects and could improve the drug efficacy.

Keywords: Drug delivery; GIT; Dissolution; MCF-7 breast cancer line; MTT assay