FORMULATION AND EVALUATION OF BILAYER TABLET OF DICLOFENAC SODIUM AND RANITIDINE HYDROCHLORIDE

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Formulation and Evaluation of Bilayer Sustained Release Tablets of Diclofenac Sodium and Ranitidine Hydrochloride

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Abstract:

The aim of this investigation is to prepare Bilayer tablet containing diclofenac sodium and ranitidine hydrochloride, where diclofenac sodium will be in the sustained release layer and ranitidine hydrochloride is in the immediate release layer. Ranitidine hydrochloride was formulated as immediate release layer using sodium starch glycolate(3%, 4%, 5%), cross carmellose sodium (3%, 4%, 5%) as superdisintegrants and evaluated for physical parameter and disintegration time. The optimized ranitidine hydrochloride immediate release layer contained sodium starch glycolate (5%) showed the least disintegration time of 1.12 min and highest drug release of 99.10% 45 min was selected. Diclofenac sodium was formulated as sustained release layer using different polymer matrix like HPMC K 100M (15%, 20%) and HPMC K 4 M (15%, 20%) and combination containing HPMC K 100M (9.77%, 10.77%, 12.55%) and HPMC K 4 M (4.71%, 8.22%, 8.37%) evaluated for physical parameter along with *in vitro* release studies. The optimized sustained release layers contained HPMC K 100M (12.55%) and HPMC K 4 M (8.37%) with highest drug release of 99.21% for 10 hr was selected. Finally bilayer tablets were prepared by single compression of optimized diclofenac sustained release layer and ranitidine hydrochloride immediate releasing layer. Bilayer tablets were evaluated for hardness, thickness, weight variation, friability and drug content. Diclofenac causes acidity in stomach and ranitidine decrease the acidity related to diclofenac. Hence bilayer tablets of ranitidine hydrochloride and diclofenac sodium as immediate and sustained release combination could be used to improve patient compliance towards the effective management of inflammation along with acidity and gastritis.