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Original Article

Combination of inulin and time dependent polymethacrylates as a coating system to achieve colonic delivery of indomethacin

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Abstract:

*Background:*In the previous study it was shown that films prepared from inulin (In) in combination with Eudragit RS (ERS) and RL (ERL) were susceptible to inulinase. Purpose: The aim of this work was to assess the suitability of these combinations for colonic delivery of indomethacin.

Methods: Indomethacin was loaded onto non-pareil seeds using fluidized bed apparatus to produce pellets with 20% w/w drug load. Drug loaded pellets were coated with In-ERS in the ratios of 20:80 and 30:70, or In-ERL in the ratio of 20:80 to different coating loads. The release of drug was examined in simulated gastric (for 2 hrs) and small intestine and in the presence of inulinase in simulated colonic medium (for 12 or 24 hrs).



Results: The results of this study revealed that incorporation of inulin as a bacterially degradable polysaccharide into ERS or ERL could modulate drug release. Coating level up to 15% significantly affected drug release from In-ERL or In-ERS coated pellets. However further increase in coating load to 20% had no significant effect on drug release from In-ERL coated pellets ($f_1=9.39$). Drug release from In-ERL coated pellets was faster and showed some pH dependency.

Conclusions: Formulation coated with In-ERS (20:80) and coating level of 20% was considered more appropriate for colon delivery of indomethacin, as drug release was pH independent and formulation was resistant to drug release in the upper GI media for up to 7 hrs. This formulation was also susceptible to inulinase and released about 40% of indomethacin in the simulated colonic media.

Keywords:

Colonic drug delivery , Indomethacin , Inulin , Eudragit RS , Eudragit RL

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