

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

Akhgari, A.<sup>a</sup>, Afrasiabi Garekani, H.<sup>b</sup>, Sadeghi, F.<sup>b</sup>

<sup>a</sup> School of Pharmacy, Ahvaz Jundishapur University of Medical Sciences, Ahvaz, Iran

<sup>b</sup> School of Pharmacy and Pharmaceutical Research Centre, Mashhad University of Medical Sciences, Mashhad, Iran

[View references \(7\)](#)

### 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 20:70, 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 10% 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 ( $f_1=9.29$ ). 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 2 hrs. This formulation was also susceptible to inulinase and released about 40% of indomethacin in the simulated colonic media.

### Reaxys Database Information

### Author keywords

Colonic drug delivery; Eudragit RL; Eudragit RS; Indomethacin, inulin

### Indexed Keywords

**EMTREE drug terms:** eudragit; eudragit rs; indometacin; inulin; inulinase

**EMTREE medical terms:** article; colon; controlled study; culture medium; degradation; drug coating; drug delivery system; drug fomulation; drug pellet; drug release; fluidized bed; pH; simulation; small intestine; stomach; timed drug release; upper gastrointestinal tract

**Chemicals and CAS Registry Numbers:** eudragit, 24938-16-7, 01822-44-7, 9070-11-7; eudragit rs, 33434-24-1; indometacin, 03-86-1, 74202-20-8, 7681-04-1; inulin, 900-80-0; inulinase, 9020-77-7

**Device tradename:** Eudragit RL, Roehm Pharma, Germany, Eudragit RS, Roehm Pharma, Germany.

**Manufacturers: Drug manufacturer:** darupakhs, Iran.

**Device manufacturer:** Roehm Pharma, Germany.

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