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Formulations based on polymers as smart delivery systems

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Most traditional oral formulations are primarily absorbed in the small intestine. Because the medication must function topically at the site of inflammation, this limits their ability to treat a variety of colon problems. This paved the way for the creation of an intelligent colonic drug delivery system, which improved therapeutic efficiency, reduced dosing frequency and potential side effects, and increased patient acceptance, especially in cases where enemas or other topical remedies might not be enough to completely treat inflammation. The main objective of this study was to design an intelligent drug delivery system based on pH-sensitive polymeric formulations synthesized by free-radical bulk polymerization. The formulations included Capmul MCM C8 to boost bioavailability and 5-amino salicylic acid as a model medication. The developed system may be able to trigger drug release under conditions that mimic the colon while delaying it under conditions that mimic the stomach and small intestine, according to an *in vitro* evaluation of swelling and release. This finding suggests the system's potential utility as a smart colonic drug delivery system.

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