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Hydrotalcite as a potential drug delivery vehicle for NSAIDS

Mukesh Sharma, Atindra Shukla, Manish Mishra, D O Shah, B N Suhagiya and Tejal Soni
Dharmsinh Desai University, India

Synthesised layered double hydroxides, hydrotalcites (HT) were used as drug carriers for NSAIDs. Salicylic acid derivatives form one of the most common classes of NSAIDs. Aspirin, an acidic drug is slightly soluble in water, short half life and increase the risk of gastrointestinal ulcer as well as stomach bleeding. In the present study we chose aspirin as a drug candidate which possesses analgesic and anti-platelet properties and widely used being prescribed to heart patients (to prevent heart attacks, strokes & blood clot formation after post surgery). "Mg_6Al_2 (CO_3) $(OH)_{16}$. $4H_2O$" of hydrotalcite contains exchangeable anions. By anion exchange process HT intercalate aspirin in to its layers. Our aim is to provide stability, solubility, and reduced of gastric adverse drug effects as well as its controlled / sustained release of the drug. Drug release of the intercalation compound was performed in vitro in different simulated intestinal pH fluid. Results from the intercalated drug process show that hydrotalcite is able to intercalate aspirin with a simple procedure and with a good drug loading capacity (40-55%). We have explored several conditions to load the drug into HT layers in order to optimize the drug loading. The kinetics analysis shows the importance of the diffusion through the particle in controlling the drug release rate. The obtained release shows that hydrotalcite may be used to prepare modified release formulations.

sharma.mukesh62@gmail.com