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Design, development and performance evaluation of Eudragit microspheres for controlled drug delivery of Omeprazole

Rakesh Goswami, G K Jani and **M C Gohel**
India and Torrent Research Center, India

Objective: In this present investigation, attempts were made to develop microspheres of omeprazole using Eudragit as a polymer. Omeprazole which is substituted benzimidazole, exhibits potent and long lasting inhibition of gastric acid secretion by selectively interacting with the gastric proton pump (K^+-H^+ /ATPase pump) in the parietal cell secretary membrane.

Omeprazole degrades very rapidly in the acid environment of stomach and undergoes hepatic first pass metabolism. Bioavailability of omeprazole following oral administration is very low. Hence, it is concrete reason to develop a controlled release formulation of omeprazole.

Introduction: Omeprazole is used in a number of acid peptic ulcers, rate of healing of duodenal and gastric ulcers increase with the therapy of omeprazole. It is a drug of choice for Zollinger-Eliison syndrome and is also effective in reflux oesophagitis. Omeprazole contains sulphinyl group in the bridge which links substituted benzimidazole and pyrimidie rings.

It is stable over pH 6 and is devoid of inhibitory activity at pH 7. Dose of omperazole varies from 10 to 90 mg per day, but data shows that at least 20 mg is required to obtain an optimal reduction in 24 hrs intragastric acidity. 20 mg if continuously taken for 3 to 5 days shows full control of acid secretion.

Eudragit is widely used for delayed and enteric coating formulation because they contain free carboxyl group in their structure which transformed in to carboxylate groups in the pH range about 5-7 by salt formation with alkali or amines. They have good solubility in the relatively non-toxic solvent like CH_2Cl_2, $CHCl_3$ etc.

rakeshchaki@gmail.com