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Pharmaceutical suspension containing both immediate/sustained release omeprazole loaded carbopol nanospheres: Preparation and in vitro characterization

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Abstract

Background and Methods: A dual (immediate/sustained-release) oral omeprazole suspension was prepared as a innovative dosage form to eliminate Helicobacter pylori. Carbopol®-loaded omeprazole nanospheres might bind with the mucosal membrane after delivery to the stomach and could increase the efficacy of the treatment, providing both an instant and a sustained action.

Objective: The aim of our study was to develop omeprazole nanospheres using a nano spray-dryer technique and to explore such features as their drug content, product yield, particle size, in vitro drug release, surface characteristics and stability. The nanospheres had a particle size range of 400–805 nm after optimizing the preparation method using a central composite design. The drug content and percentage yield was 88.8% ± 0.4% and 95.6% ± 0.4%, respectively. The in vitro release profile of the omeprazole nanospheres was reliable with a Peppas release pattern, and the release after one hour was 16%, while for the original drug, omeprazole, under the same experimental conditions, 91% was released in the first 0.5 hours.

Conclusion: The nanospheres used in this study assisted controlled release of omeprazole over an extended period of time for up to 12 hours and the preparation was stable for 12 months.

Biography

Sree Harsha received his Master of Pharmacy Degree and subsequently earned a doctorate in Pharmaceutics from Rajiv Gandhi University of Health Sciences, Bangalore, India in 2006. He came to King Faisal University in 1997 as an assistant professor in the Department of Pharmaceutical Sciences, bringing with him several years' worth of teaching experience in fundamentals of pharmaceutics and drug delivery systems. His primary area of focus is on pharmaceutical technology and novel/targeted drug delivery systems. I have contributed so far to 23 peer-reviewed full papers on a variety of topics in lung targeting, topical drug delivery, and mucoadhesive drug delivery systems, also has contributed in writing a book chapter titled "Targeted Drug Delivery System" and "Microspheres" in Textbook of Industrial Pharmacy, Publisher-Orient Longman Private Ltd. In addition he is an Ad-hoc reviewer for scientific journals.