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WINNER

Rajnibhai V. Patel

**PharmInnova
Award**

Best M. Pharm Thesis

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Ms. Sonali S. Wankhede

Research Guide



Dr. N. S. Ranpise

Subject:

Pharmaceutics & Pharmaceutical Technology

Thesis Title:

Design and Development of Bilayer Floating Tablet

College:

Sinhgad College of Pharmacy, Pune

Novel formulation of Amoxicillin with Aloe vera for treatment of stomach ulcer

Outcome of Research:

In the treatment of gastrointestinal ulcers caused by Helicobacter Pylori bacteria, a costlier 'triple therapy' approach is commonly used in treatment which consists of amoxicillin, clarithromycin and omeprazole. A study was conducted with the aim to replace the costly triple therapy with an economical combination of only one synthetic drug (amoxicillin) and an indigenous herbal substitute (Aloe vera gel powder). The specially formulated bilayer floating tablet of above combination increased the retention time in the stomach. In vivo studies in rats confirmed that this formulation ensures complete absorption of amoxicillin with high local availability at the site of action. This provides possibility of effective and more economic approach than triple therapy.

ABSTRACT

Usual treatment for *Helicobacter pylori* induced peptic ulcer includes a ‘triple therapy’ consisting of amoxicillin, clarithromycin and omeprazole. The objective of this project work was defined with a view to retain the drug in stomach for better anti ulcer activity and substituting one of the synthetic drugs in this therapy with an herbal alternative. Hence, aim of the present work was to design and develop a bilayer floating tablet of amoxicillin and *Aloe vera* gel powder for treatment of peptic ulcer. *Aloe vera* gel powder is used for its cytoprotective action. Bilayer floating tablets were prepared by applying direct compression technique. The proportion of sodium bicarbonate and citric acid were adjusted to get the least possible lag time with good matrix integrity and total floating time. Polymer concentration was adjusted to get the maximum release in 8 h. The formulation was developed using hydroxy propyl methyl cellulose (HPMC) K4M and HPMC K100M in ratio of 85:15 along with 1:4 ratio of effervescent agents was found to give floating lag time of less than 1 min with total floating time of more than 8 h and 97.0% drug release in 8 h. *In vivo* studies in rats meet the requirement of anti ulcer activity for bilayer tablet in comparison to single amoxicillin as standard.