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(57) Abstract :
The present invention relates to floating alginate-based microspheres loaded with clarithromycin for targeted gastroretentive drug delivery against Helicobacter pylori infection. The microspheres are prepared by ionic gelation technique using sodium alginate as the matrix-forming polymer and calcium chloride as the crosslinking agent. Sodium bicarbonate is incorporated as a gas-generating agent to impart floating characteristics upon contact with gastric fluid. Hydroxypropyl methylcellulose is added as a release-modifying agent. The prepared microspheres exhibit spherical morphology with particle sizes ranging from 500 to 900 micrometers and drug entrapment efficiency between 75 and 92 percent. The formulation demonstrates excellent buoyancy with floating lag time less than two minutes and total floating duration exceeding twelve hours. In vitro drug release studies reveal sustained release of clarithromycin exceeding 90 percent over twelve hours following Higuchi diffusion kinetics. The gastroretentive floating microspheres provide prolonged drug release at the site of H. pylori colonization, offering improved therapeutic outcomes for eradication therapy.

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