## ABSTRACT

An ionotropic gelation technique was used to prepare levofloxacin-loaded particles with an aim of enhancing its controlled release attributes. Levofloxacin, which is a broad-spectrum antibiotic drug, faces difficulties that include faster drug expulsion and low bioavailability. For this reason, beads particles were formed using Chitosan as the primary polymer and calcium chloride as the cross-linking agent. By putting a solution levofloxacin in Chitosan into a calcium chloride solution, the resultant made beads through an ionic process take place. To achieve the desired particle properties various formulation parameters like drug/polymer ratio, polymer concentration and cross-linker concentration were optimized. The prepared particles were characterized by several analytical techniques. Scanning electron microscopy (SEM) was used to evaluate surface morphology and detect spherical and smooth particles. UV-Visible spectroscopy determined both drug trapping efficiency and drug loading capacity showing high drug encapsulation efficiency. In vitro drug release study was carried out in simulated gastric fluid showing sustained release over 24 h. The conclusion of this study is that ionotropic gelation is an effective method for making.