Drug loading efficiency and release behavior of chitosan hollow beads: comparison of hydrophobic and hydrophilic drugs

Asiah Aibah-Masri, Thi Phuong Thuy Pham[1], 송명희[2],
윤영상[3,*]
전북대학교; [1]Department of Bioprocess Engineering;
[2]전북대학교 반도체 화학공학부;
[3]전북대학교 환경화학공학부
(ysyun@jbnu.ac.kr*)

In the present study, chitosan hollow beads were successfully fabricated by ionotropic gelation with sodium tripolyphosphate as a counter polyanion. Scanning electron microscopy and paraffin section analysis were used for the structure and morphology studies. The performance of these hollow beads in drug delivery application was studied using two types of drugs including ibuprofen and diltiazem hydrochloride as hydrophobic and hydrophilic model drugs, respectively. Investigation of *in vitro* drug release behavior was carried out in various pH media. It was observed that the hollow bead exhibited a very clear hollow with distinguished core-shell structure. The results revealed that they were able to encapsulate a larger amount of hydrophobic drug than hydrophilic drug. The release rate of both drugs in simulated intestinal fluid was noticeably higher than that in simulated gastric fluid.