Paper Titles

Swelling Behavior and Drug Release of Polymer Coated Nano Iron Oxide Embedded Hydroxyapatite

Abstract:

Spherical calcium-alginate gel beads containing HAIO, iron oxide (IO) nanoparticles embedded on hydroxapatite (HA), were prepared along with and poly (N-isopropylacrylamide) (PNIPAAM) or chitosan. These spheres, HAIO, HAIO-PNIPAAM and HAIO-chitosan spheres, were used as carriers of 5-fluorouracil (5-FU), one of the drugs for cancer chemical therapy, and the 5-FU release behavior in PBS solution was investigated at ambient and elevated temperatures using U-V spectrometry. The amount of the released 5-FU from the HAIO spheres was somewhat higher than that from HAIO-PNIPAAM and HAIO-chitosan spheres at ambient temperature. At elevated temperature, HAIO spheres showed an increase in quantity of released 5-FU. The amount of released 5-FU from HAIO-PNIPAAM spheres was almost the same, and that from HAIO-chitosan spheres was reduced compared to those at ambient temperature. These spheres, HAIO, HAIO-PNIPAAM and HAIO-chitosan spheres, show the similar swelling properties at elevated temperature. However, the combinations of Ca-alginate - PNIPAAM or Ca-alginate - chitosan may produce the different structures, which are core-shell network for HAIO-PNIPAAM spheres and or a polyelectrolyte complex for HAIO-chitosan spheres, leading to a different release behavior of 5-FU.

Info:

Periodical:	Key Engineering Materials (Volume 829)
Pages:	108-113
DOI:	https://doi.org/10.4028/www.scientific.net/KEM.829.108
Citation:	Cite this paper
Online since:	December 2019
Authors:	Yoshiyuki Yokogawa*, Rina Ohkura, Yoko Inoue, Atsumasa Shishido, Ereath Beeran Ansar, Hari Khrisna Varma
Keywords:	Drug Release, Hydroxyapatite, Iron Oxide Nanoparticle, Thermal Responsive Polymer
Export:	RIS, BibTeX
Price:	39,00 €
Permissions:	Request Permissions
Share:	

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