

## Accepted Manuscript

Title: Hydrogels of sodium alginate in cationic surfactants: surfactant dependent modulation of encapsulation/release towards Ibuprofen

Author: Suraya Jabeen Oyais Ahmad Chat Masrat Maswal  
Uzma Ashraf Ghulam Mohammad Rather Aijaz Ahmad Dar



PII: S0144-8617(15)00629-3  
DOI: <http://dx.doi.org/doi:10.1016/j.carbpol.2015.06.111>  
Reference: CARP 10102

To appear in:

Received date: 20-1-2015  
Revised date: 25-6-2015  
Accepted date: 26-6-2015

Please cite this article as: Jabeen, S., Chat, O. A., Maswal, M., Ashraf, U., Rather, G. M., and Dar, A. A., Hydrogels of sodium alginate in cationic surfactants: surfactant dependent modulation of encapsulation/release towards Ibuprofen, *Carbohydrate Polymers* (2015), <http://dx.doi.org/10.1016/j.carbpol.2015.06.111>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Elsevier Editorial System(tm) for Carbohydrate Polymers  
Manuscript Draft

Manuscript Number: CARBPOL-D-15-00192R3

Title: Hydrogels of sodium alginate in cationic surfactants: surfactant dependent modulation of encapsulation/release towards Ibuprofen

Article Type: Research Paper

Keywords: Sodium Alginate; Hydrogel; Surfactant; Gemini; Ibuprofen; Potassium Carbonate

Corresponding Author: Dr. Aijaz Dar, Ph.D

Corresponding Author's Institution: University of Kashmir

First Author: Aijaz Dar, Ph.D

Order of Authors: Aijaz Dar, Ph.D; Suraya Jabeen, M.Phil; Masrat Maswal, Ph.D.; Oyais Chat, M.Phil; Uzma Khan, M.Sc.; Ghulam Mohammad Rather, M.Phil., Ph.D

Abstract: The interaction of cetyltrimethylammonium bromide (CTAB) and its gemini homologue (butanediyl-1,4-bis (dimethylcetylammmonium bromide), 16-4-16 with biocompatible polymer sodium alginate (SA) has been investigated in aqueous medium. Addition of K<sub>2</sub>CO<sub>3</sub> influences viscoelastic properties of surfactant impregnated SA via competition between electrostatic and hydrophobic interactions. Viscosity of these polymer-surfactant systems increases with increase in concentration of K<sub>2</sub>CO<sub>3</sub>, and a cryogel is formed at about 0.5M K<sub>2</sub>CO<sub>3</sub> concentration. The thermal stability of gel (5% SA + 0.5 M K<sub>2</sub>CO<sub>3</sub>) decreases with increase in surfactant concentration, a minimum is observed with increase in 16-4-16 concentration. The impact of surfactant addition on the alginate structure vis-à-vis its drug loading capability and release thereof was studied using Ibuprofen (IBU) as the model drug. The hydrogel with 16-4-16 exhibits higher IBU encapsulation and faster release in comparison to the one containing CTAB. This higher encapsulation-cum-faster release capability has been related to micelle mediated solubilization and greater porosity of the hydrogel with gemini surfactant.

Download English Version:

<https://daneshyari.com/en/article/7787413>

Download Persian Version:

<https://daneshyari.com/article/7787413>

[Daneshyari.com](https://daneshyari.com)