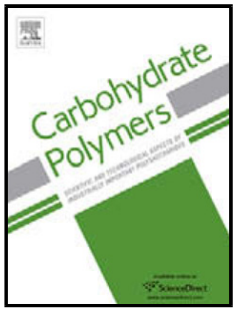

Title: Hydrogels of sodium alginate in cationic surfactants: surfactant dependent modulation of encapsulation/release towards Ibuprofen

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Abstract: The interaction of cetyltrimethylammoium bromide (CTAB) and its gemini homologue (butanediyl-1,4-bis (dimethylcetylammonium bromide), 16-4-16 with biocompatible polymer sodium alginate (SA) has been investigated in aqueous medium. Addition of K2CO3 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 K2CO3, and a cryogel is formed at about 0.5M K2CO3 concentration. The thermal stability of gel (5% SA + 0.5 M K2CO3) 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.