

Synthesis and characterization of crosslinked chitosan-based functional biomaterial using molecular recognition technology

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In this work, crosslinked chitosan-based functional biomaterial for sulindac (SLD) recognition are prepared by using chitosan, PVA, SLD imprinted nano-sized copolymer particles (SLD-INP), sulfosuccinic acid (SSA) as a crosslinker, and glycerol (GL) and citric acid (CA) as plasticizers. SLD-INP are synthesized by the method of emulsion polymerization. To prepare SLD-INP, MMA is used as a third monomer, MAA as a functional monomer, SLD as the template, and EGDMA as a crosslinker. The morphology of SLD-INP and prepared biomaterial was observed by the SEM. The physical properties such as tensile strength (TS), elongation at break (%E), swelling behavior (SB) and solubility (S) for crosslinked chitosan-based functional biomaterial were also investigated. To evaluate the binding characteristics of chitosan-based functional biomaterial with/without the addition of SLD-INP, the adsorption-desorption properties of the prepared films is investigated by equilibrium binding experiment, measuring the adsorbed amounts for SLD and their structural analogue, and the selectivity factor (α). The results of the evaluation analysis indicate that the prepared functional biomaterial have high separation abilities and selectivity.