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**Formulation of a novel antibacterial polymeric composite for delivery of curcumin**

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A novel antibacterial nanocomposite was developed for delivery of curcumin through a completely green and environmentally friendly route (without using any organic solvents, hazardous chemicals and even harsh procedure). To achieve this, natural biopolymers sodium alginate, chitosan and carboxymethyl cellulose sodium were used. Curcumin and magnetic nanoparticles were encapsulated into the alginate nanocapsules by formation of alginate-Ca<sup>2+</sup> complex. To modify the drawbacks of alginate nanocapsules like porosity and burst drug release, they were coated with chitosan and carboxymethyl cellulose through inter-ionic interactions between oppositely charged biopolymers. After coating with these natural polymers, porosity was reduced and burst drug releases were modified. The synthesized nano-carrier was characterized by zetasizer, FTIR, <sup>1</sup>H NMR, DSC and SEM. Its antibacterial activity was assessed by determining Minimum Inhibitory Concentration (MIC) values. It was concluded that this novel drug delivery vehicle makes antibacterial processes proceed, representing more efficient drug delivery system in nanomedicine.

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