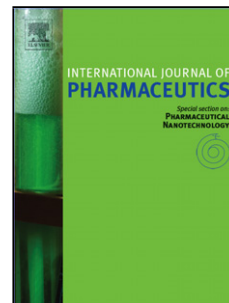


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Layer-by-Layer Engineered Nanocapsules of curcumin with improved cell activity

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Graphical abstract

ABSTRACT

Nanocarriers based on electrostatic Layer-by-Layer (LbL) assembly of CaCO₃ nanoparticles (CaCO₃ NPs) was investigated. These inorganic nanoparticles was used as templates to construct nanocapsules made from films based on two oppositely charged polyelectrolytes, poly(diallyldimethylammonium chloride), and poly (sodium 4-styrene-sulfonate sodium salt), followed by core dissolution. The naked CaCO₃ NPs, CaCO₃ NPs coated with the polyelectrolytes and hollow nanocapsules were found with hexagonal shape with average sizes of 350-400 nm. A reversal of the surface charge between positive to negative zeta potential values was found, confirming the adsorption of polyelectrolytes. The loading efficiency and release of curcumin were controlled by the hydrophobic interactions between the drug and the polyelectrolyte matrix of the hollow nanocapsules. The quantity of curcumin released from hollow

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