


Research Article

Starch Acetate Nanoparticles as Controlled Release Nanocarriers for Piperine

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Abstract

This paper aims to synthesize starch acetate nanoparticles for controlled release of piperine. Starch acetate is synthesized by chemically modified sago starch with acetylation reaction. Starch acetate nanoparticles with mean particle sizes of 110 nm are obtained by controlled precipitation through drop-wise addition of dissolved starch acetate solution into excess absolute ethanol. Piperine is loaded onto starch acetate nanoparticles and native starch nanoparticles via the in situ nanoprecipitation process. Starch acetate nanoparticles exhibit higher piperine loading capacity as compared to native starch nanoparticles with the maximum loading capacity of 0.46 and 0.33 mg mg⁻¹, respectively. Piperine is observed to release from starch acetate nanoparticles in a slow and sustained manner at pH 1.2 for 24 h. In contrast, piperine is observed to fully release from native starch nanoparticles after 16 h.



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