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Development and Characterization of Biodegradable Chitosan Nanoparticles Loaded with Lovastatin using Factorial Design

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SUMMARY. **The objective of the present work was to formulate chitosan nanoparticles as carriers for the lovastatin, since this drug undergoes extensive first pass extraction in the liver, and bioavailibity is low (< 5 %). Nanoparticles were prepared by modified ionotropic gelation method using 3^2 full factorial design. From the preliminary trials, the constraints for independent variables X1 (concentration of chitosan) and X2 (concentration of sodium tripolyphosphate) have been fixed and examined to investigate effect on particle size, encapsulation efficiency, zeta potential, % release, SEM, FTIR, XRD and DSC analysis of lovastatin. The diameter of prepared nanoparticles was controlled in the range of 100-800 nm, spherical shape and narrow diameter distribution. The release profiles of all batches were very well fitted by both the zero order model and the anomalous transport. These results indicate that lovastatin nanoparticles could be effective in sustaining drug release for a prolonged period.**

KEY WORDS: Chitosan, Factorial design, Ionotropic gelation, Lovastatin, Oral drug delivery, Sustained release.

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