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FORMULATION AND EVALUATION OF EMBELIN LOADED PECTIN NANOPARTICLES FOR THE TREATMENT OF DIABETES

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Objectives: Embelin exhibited insulin sensitizing effect through adipose tissue specific partial agonist of PPAR γ and activated glucose transport through translocation and activation of GLUT4 mediated by insulin dependent PI3k/p-Akt pathway in epidermal adipose tissue. It also protected β -cells by scavenging free radicals and alleviated dyslipidemia in insulin resistant animal model. So in present study we developed embelin loaded controlled release nanoparticles using pectin.

Methods: The Nanoparticles were produced via the ionotropic gelation method using the biocompatible natural polymers pectin. The polymer concentration was optimized using the 3²factorial method to acquire minimum particle size. The optimum formula was further evaluated like zeta potential, particle morphology, profile spectra of FT-IR and in vitro release study.

Results: Obtained optimum formula consist of 0.8% pectin with the mean entrapment efficiency of $7.59\% \pm 3.21$, particle size of $207.2 \text{ nm} \pm 12.7$ polydispersity index of 0.512 ± 0.021 , zeta potential $40.20 \text{ mV} \pm 13.61$, particle round and dark, ionic gelation was confirmed by FT-IR and the release profile following the kinetics Korsmeyer-Peppas models with Fickian diffusion.

Conclusions: Based on the findings of the present study, it is expected that this novel formulation be a superior therapeutic alternative to the currently available embelin delivery systems.