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### Screening and optimization of formulation factors affecting fabrication of chitosan microspheres by emulsion cross-linking technique

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Chitosan is a biopolymer has capability to get cross-linked with anionic molecules such as glutaraldehyde, tripolyphosphate and Vanillin due to its polycationic nature. Emulsion cross-linking technique was applied for the fabrication of microspheres of the selected drug. Here, experimental design was used to screen the cross-linkers and factors producing desirable responses by using Minitab version 17. The seven independent variables viz. polymer concentration, type of cross-linker, concentration of cross-linker, time of cross-linking, agitation speed, organic to aqueous phase ratio, concentration of surfactant were selected for validation of process. The optimisation of independent variables was done with respect to obtained values of dependent variables such as particle size, encapsulation efficiency and drug release. The constraints applied were minimizing particle size, maximize encapsulation efficiency and time of drug release. Pareto charts and surface response graphs allowed in determination main affecting formulation factors. Polymer concentration and cross-linker concentration has affected encapsulation and drug release time directly while influenced particle size inversely. Further, the optimized formulation was obtained by using response optimizer Minitab and % bias was calculated. Conclusively, successful optimization of microspheres was obtained with less percentage bias and desirable dependent variables.

#### Biography

Sarita Kumari Yadav obtained her BPharm degree in 2009 from University of Delhi (DIPSAR) and earned her MPharm from Indian Institute of Technology (Banaras Hindu University) (IIT (BHU)), India, in 2011. She is presently pursuing PhD and is receiving Teaching Assistantship from IIT (BHU). She has worked as Junior Drug Analyst at Uttar Pradesh Food Safety Drug Administration, UP Government, India.

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