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## Formulation and evaluation of curcumin loaded polymeric nanoparticles for the treatment of breast cancer

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**B**reast cancer, a carcinoma type of cancer, begins in the breast tissue made up of the mammary glands (lobules), duct and other supportive tissue and it is one of the most commonly occurring cancer in females. The aim of the present study was to formulate and evaluate curcumin nanoparticles for its anticancer activities. Polymeric nanoparticles were prepared using Polycaprolactone (PCL) as polymer and Tocopheryl Polyethylene Glycol 1000 Succinate (TPGS) as surfactant by nano-precipitation method. 23 full factorial deign was used to optimize the formulation by using Design Expert\* Version 9 software. The prepared nanoparticles were characterized for physico-chemical properties such as particle size, Polydispersity Index (PDI), Zeta Potential (ZP), %Entrapment Efficiency (%EE), surface morphology, drug and polymer interaction studies and *in vitro* drug release characteristics. The optimized nanoparticles exhibited an average particle size of 273±2.6 and PDI of 0.322±0.03. The zeta potential of the optimized batch of polymeric nanoparticles was found to be -42.30±3.1 mV suggesting good stability. FTIR and TGA studies showed no interaction between the drug and excipients. Transmission electron microscopy showed that nanoparticles were spherical in shape with a smooth surface. In vitro drug uptake studies of curcumin loaded (PCL+TPGS) nanoparticles as compared to curcumin loaded PCL nanoparticles in the cells. These finding suggest the potential of curcumin loaded (PCL+TPGS) nanoparticles for use as an adjuvant therapy in breast cancer.

## Biography

Mamta Chaudhary is pursuing her Post-Graduation (MPharm IDD) from Department of Pharmaceutics, Indian institute of Technology (Banaras Hindu University), India. Her current area of research is nano-technology based drug delivery system. She is doing her research work under the supervision of Mrs Ruchi Chawla, Assistant Professor at Department of Pharmaceutics, IIT (BHU). She has qualified GATE-2015. She is receiving financial assistance from MHRD, Government of India for her Post-Graduation research work.

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