## Experimental Design for Formulation Optimization of Nanoparticle of Cilnidipine

Authors : Arti Bagada, Kantilal Vadalia, Mihir Raval

**Abstract :** Cilnidipine is practically insoluble in water which results in its insufficient oral bioavailability. The purpose of the present investigation was to formulate cilnidipine nanoparticles by nanoprecipitation method to increase the aqueous solubility and dissolution rate and hence bioavailability by utilizing various experimental statistical design modules. Experimental design were used to investigate specific effects of independent variables during preparation cilnidipine nanoparticles and corresponding responses in optimizing the formulation. Plackett Burman design for independent variables was successfully employed for optimization of nanoparticles of cilnidipine. The influence of independent variables studied were drug concentration, solvent to antisolvent ratio, polymer concentration, stabilizer concentration and stirring speed. The dependent variables namely average particle size, polydispersity index, zeta potential value and saturation solubility of the formulated nanoparticles of cilnidipine. The cilnidipine nanoparticles were characterized by average particle size, polydispersity index, zeta potential value and saturation solubility of the formulated nanoparticles of cilnidipine nanoparticles were characterized by average particle size, polydispersity index, zeta potential value and saturation solubility and it results were 149 nm, 0.314, 43.24 and 0.0379 mg/ml, respectively. The experimental results were good correlated with predicted data analysed by Plackett-Burman statistical method.

Keywords : dissolution enhancement, nanoparticles, Plackett-Burman design, nanoprecipitation

Conference Title : ICPRD 2018 : International Conference on Pharmaceutical Research and Development

Conference Location : Paris, France

Conference Dates : January 25-26, 2018

1