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DOE strategy in preparation and optimization of nano-therapeutic system for the management of cancer

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The present research was performed to study, develop and screen the optimal parameters for a novel nanotherapeutic system using Polyhydroxybutyrate-co-Hydroxyvalerate (PHBV) polymer that will encapsulate as well as protect the selected drug against premature degradation during chemotherapy. PHBV is a novel biodegradable, biocompatible and non toxic hydrophobic polymer having merits of being produced using bacterial fermentation technique. Formulations were prepared using modified emulsification solvent evaporation technique by adopting Risk assessment studies, Plackett-Burman design as primary factor screening and Box-Behnken design for response optimization plot. The relationship between design factors and experimental data was evaluated using Minitab 17. Physicochemical characteristics were evaluated and optimized in order to achieve desired particle size, shape, degree of crystalinity, surface charge and polydispersity index with maximum percentage of entrapment efficiency. Thus, by using Quality by Design DOE strategy, development of novel nanotherapeutic system was made possible by increasing the entrapment efficiency with improved physicochemical characteristics.

Biography

Harsh Vardhan has completed his BPharm from JSS College of Pharmacy, Mysore and MPharm from Lovely Professional University, Jalandhar. He is now pursuing PhD from Department of Pharmaceutics, IIT (BHU), Varanasi. He also worked as a QA Officer in Aristo Pharmaceuticals Pvt. Ltd. and as Jr. Officer in ARD department of Acme Formulations Pvt. Ltd. Baddi (Himachal Pradesh).

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