



## **Optimization of Encapsulation Efficiency of Piperine in Soya-Lecithin Multilamellar Vesicles**

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**Abstract :** The objective of the study was to predict, optimize and generate surface contours for encapsulation efficiency of piperine in soya lecithin multilamellar vesicles (MLVs) using artificial neural network (ANN) and factorial design – multiple regression analysis (FD-MRA). Statistica Neural Network was used for ANN while the FD-MRA was performed using the computer program SAS. Nine model formulations were prepared. The formulation variables, the drug and the volume of hydration were taken as independent variables, and the percentage drug entrapment (PDE) was taken as a dependent variable. Experimental data was generated. ANN generated predicted values for the experimental data after several iterations. The best performed network was considered in the predictions. In case of FD-MRA, the prediction numbers were determined using the programming language SAS. ANN showed more error compared with FD-MRA.

**Keywords :** Optimization, response, surface, piperine, liposomes, error, neural, ANN, MLV and PBS.