

PP141

## Development, Optimization, and Characterization of Golden Milk as Immunobooster in COVID-19 using QbD Approach

Shipra Mahal, Ashish Jain, Subh Naman, Ashish Baldi\*

Pharma Innovation Lab, Department of Pharmaceutical Sciences and Technology,  
Maharaja Ranjit Singh Technical University, Punjab, Bathinda

\*Corresponding Author

### ABSTRACT

In the wake of the COVID-19 outbreak, enhancing the body's immunity plays an important role in maintaining optimum health. Turmeric in milk generally known as golden milk is recommended to be consumed for boosting immunity. In the present study, turmeric milk powder was prepared by a spray-drying method due to quality and efficiency requirements and optimized by using response surface methodology. For defining the relationship between input variables (turmeric milk concentration and run time) and output variables (Hausner's ratio, moisture content) central composite design was selected. With the second-order quadratic polynomial model, main and interaction effects were detected, also ANOVA parameters were analyzed, and the overlay plot represents the desired region for the experiment. The developed model was then validated. After optimization turmeric milk powder was characterized by moisture content, bulk density, tapped density, Carr's index, angle of repose, and drug content. Based on characterization, F1 with 75% conc. of turmeric milk and run time for 67 min showed the optimum result. The curcumin content of the formulation was precisely balanced by the addition of curcumin to avoid the problem of content variability as faced in many herbal formulations. The results of turmeric milk powder after evaluation of the above parameters were found to be satisfactory and its compliance with existing industrial practices. The present formulation may offer a ready-to-serve drink for delivery of assured curcumin for immunomodulation as well as a wide range of therapeutic benefits with patient compliance and would also help in building strong immunity to fight against COVID-19.

**Keywords:** curcumin, QbD, COVID-19, central composite design, immunobooster

