



## Process optimization of ecological probe sonication technique for production of rifampicin loaded niosomes

**Dr. Daulat Haleem Khana**

*Lahore College of Pharmaceutical Sciences, Pakistan*

### Abstract:

The aim of the present study was to develop an optimized niosome formulation for the encapsulation of a poorly water-soluble drug by the ecological probe sonication method. Pluronic L121 and Span 60 were used as surface active agents and the optimization of the composition was made with the aid of Design of Experiment (DoE) concept. Rifampicin was used as a model drug. Concentration levels of charge inducing agent, dicetylphosphate (DCP), and Pluronic L121 were studied as variables. Prepared niosomes with varying concentrations of DCP and Pluronic L121 resulted in small sized niosomes with sizes ranging from 190 nm to 893 nm. During the four weeks stability testing, the particle sizes were reduced slightly. The formulation containing 2 mg of DCP resulted in most stable niosomes with 75.37% entrapment efficiency. All the niosomal formulations showed higher in vitro drug release rates as compared to bulk drug formulation. As a conclusion, rifampicin loaded niosomes prepared with Pluronic L121 and Span 60 resulted in stable, small sized niosomes with improved drug release profile.

### Biography:

Daulat Haleem Khan has completed his PhD in November 2019 from University of Sargodha, Sargodha, Pakistan and worked as a Ph.D. scholar for six months as a visiting student at University of Helsinki, Finland for Ph.D. research work. He is Assistant Professor at Lahore College of Pharmaceutical Sciences, Lahore Pakistan. He has published 10 papers in reputed journals with Impact factor of 33.361.



### Publication of speakers:

1. Khan, Daulat & Bashir, Sajid & Khan, Muhammad & Figueiredo, Patricia & Santos, Hélder & Peltonen, Leena. (2020). Formulation optimization and in vitro characterization of rifampicin and ceftriaxone dual drug loaded niosomes with high energy probe sonication technique. *Journal of Drug Delivery Science and Technology*. 58. 101763. 10.1016/j.jddst.2020.101763.
2. Zaman, Ajkia & Aquib, Md & Farooq, Muhammad & Ghayas, Sana & Khalid, Farah & Boaf, George & Wande, Dickson & Khan, Daulat & Bithi, Tasnim & Bavi, Rohit & Wang, Bo. (2020). Theranostic applications of smart nanomedicines for tumor-targeted chemotherapy: a review. *Environmental Chemistry Letters*. 18. 10.1007/s10311-020-01031-8.
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