

Industrial & Physical Pharmacy Seminar

IPPH 69600

Monday, November 21, 2022
3:30 PM in RHPH 164

“Evaluating the Impact of Excipients on Spray-Dried Macromolecules”



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First Seminar

Therapeutic biologics are becoming increasingly important in the field of medicine. However, instability poses a major hurdle in the development of biological therapeutics. Solid formulations are known to be more stable than their solution counterparts in general; but drying processes may create stresses on the biologics. Pharmaceutical excipients, including sugars, have been added in the solid biological formulation during the process of drying to maintain stability. This study investigates the effect of varying concentrations of mannitol on stability of spray-dried protein formulations. Bovine Serum Albumin (BSA) was used as a model protein. The physical and aerosolization stabilities were characterized for the spray-dried protein formulations. Formulations with relatively lower mannitol ratios had improved stability and aerosol performance. The spray-dried protein particles were also characterized with solid-state fourier-transform infrared spectroscopy (ssFT-IR), powder X-ray diffraction (pXRD), and scanning electron microscopy (SEM) to analyze the change in their secondary structure, crystallinity, and particle morphology, respectively. In future studies, influence of excipients on stability of spray-dried RNA lipid nanoparticles will be determined.