

Emerging Freeze-Drying Process Development and Scale-up Issues

Bhishma R Honarao

Department of Management Studies
Amity University
Dubai, UAE
honaraobhishma786@gmail.com

Abstract— Albeit a few rules do exist for stop evaporating process advancement and scale, there are as yet various issues that require extra consideration. The goal of this survey article is to examine some rising procedure advancement and scale-up issue with accentuation on impact of burden condition and freeze drying in novel compartment frameworks, for example, syringes, Lyoguard plate, ampoules, and 96-well plates. Understanding the warmth and mass exchange under various burden conditions and for freeze-drying in these novel compartment frameworks will help in building up a hearty freeze-drying process, which is likewise simpler to scale-up. Further innovative work needs in these rising regions have likewise been tended to. While deliberate rules have been created to address a considerable lot of these scale-up issues, there stay numerous issues that require extra consideration. The point of this audit article is to address the new rising stop evaporating process advancement and scale issues. In this study, glass syringes were suspended through a plexiglas holder. A relatively lower degree of super cooling and hence lower product resistance were found for product in syringes. In agreement with an earlier report, a decrease in sublimation rate with increasing chamber pressure was observed, but the syringe heat transfer coefficient was found to be independent of pressure. The dominant mode of heat transfer was demonstrated to be via radiation. For radiation heat transfer, the scale-up issue is not as severe since the contribution from radiation heat transfer can be estimated from the geometric view factor to the emissivity of the surfaces. Also, in this second study, significant differences were observed for freezing drying in a syringe compared to a vial.

Index Terms— Drying method, food, fruit, vegetable, sun drying, solar drying, osmotic dehydration, freeze drying.