

## **Response Surface Approach to Optimize the Conditions of Foam Mat Drying of Plum in relation to the Physical-Chemical and Antioxidant Properties of Plum Powder**

### **ABSTRACT**

This research was done to optimize the influence of various egg albumin (EA) concentrations of 2, 4, and 6% as a foaming agent and whipping times of 5, 10, and 15 minutes, on physicochemical and antioxidant properties of plum powder produced using response surface methodology (RSM). Physical properties of the foam such as density, porosity, and expansion were determined. After drying and powder manufacturing, physical properties, namely, the water absorption index (WAI) and water solubility index (WSI), as well as chemical characteristics such as pH, titratable acidity, and browning index, were assessed. Finally, antioxidant capabilities such as the total phenol content (TPC), DPPH scavenging activity, beta carotene, and total flavonoid content (TFC) were measured. According to the findings, both whipping duration and EA concentration had a substantial effect on the foam forming characteristics. Foam expansion increased significantly with EA concentration and whipping time increase, but foam density exhibited an inverse relationship as expected. Increases in EA concentration and whipping duration both raised pH values whereas titratable acidity exhibited an inverse tendency as variable quantity rose. The browning index dropped as EA concentration increased. Antioxidant qualities were retained in dried sample powder as compared with the fresh sample, and they were also altered by variable changes. Overall, a 4% EA concentration for 10 to 15 minutes produced the best dehydration effects with the most antioxidant retention.