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Optimization the Freeze Drying Conditions of Olive Seeds

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Abstract : In this study, response surface methodology (RSM) was used to obtain the optimum conditions for the freeze-drying of Gemlik variety olive seeds of to achieve the desired quality characteristics. The Box Behnken Design (BBD) was applied with three-variable and three replications in the center point. The effects of the different drying parameters including initial temperature of olive seed, pressure and time for freezing on the DPPH activity, total phenolic contents, and oleuropein absorbance value of the samples were investigated. Temperature (50 – 82 °C), pressure (0.2-0.5 mbar), time (6-10 hours) were chosen as independent variables. The analysis revealed that, while the temperature of the product prior to lyophilization and the drying time had no statistically significant effect on DPPH activity ($p>0.05$), the pressure was more important than the other two variables , and the quadratic effect of pressure had a significant effect on DPPH activity ($p<0.05$). The R2 and Adj-R2 values of the DPPH activity model were calculated to be 0.8962 and 0.7045, respectively.

Keywords : olive seed, gemlik variety, DPPH, phenolics, optimization
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