

Optimization of reaction conditions for effective antioxidants extraction from *Aronia* using statistical methods

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*Aronia* is a berry known to contain various phenolic compounds. Anthocyanin, is included in phenolic compounds as flavonoids, is well known antioxidant. These antioxidants inhibit the formation and accumulation of active oxygen in the body and play a role in preventing diseases and aging. In this study, in order to optimize the reaction conditions for antioxidants extraction from *Aronia*, statistical design of experiments was conducted. The Plackett-Burman design was used to screen the significant variables among the six different factors affecting the extraction of antioxidants in *Aronia*. Among them, four major variables (solid loading, ethanol concentration, total volume, and agitation) were finally selected and used in response surface methodology (RSM) to optimize the extraction conditions. As the results, under the optimal conditions (195 g/L solid loading, 68% ethanol concentration, 150 ml volume, and 200 rpm), the maximum extractions of phenol and anthocyanin were found to be 13.4 g/L and 2.4 g/L, respectively, as estimated by the model equations.