

An investigation on dietary phenolic compounds of apple fruit and the impact of drying time and temperature on total phenolic content of dried apple slices

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Abstract

Phenolic compounds are vulnerable to change in different drying situations. Because of the health benefits of these food components and their preventive effect on many chronic diseases, they have been the target of investigation over the past decades. The present study aims for questioning the effects of drying time and temperature on phenolic compounds in order to find an optimized drying procedure for preservation of these valuable components. Furthermore, the study tries to estimate the contribution of dried apple slices in meeting daily needs of consumers. A side study was conducted to predict the amount of total phenolic content (TPC) with the non-destructive hyperspectral imaging (H I) technique. The experiment design involved carrying out tests at three drying temperatures of 50, 60, and 70°C (blanched and non-blanched) and taking samples in different points of time within the drying procedure. This was followed by HSI of samples and measuring the TPC using Folin-Ciocalteu method. In this study, the results could not show a correlation between TPC and drying time at the given drying temperatures. The correlation could also not be observed between relative change in moisture and TPC. However, the results show a drop in TPC in the beginning of all drying temperatures. HSI results were unable to show correspondence with the TPC data. These results could be justified with interaction of phenolic compounds after exposure to heat and formation of new compounds as well as the technical limitations

in extraction and drying procedure. However, the study was successful to show the high contribution of dried apple rings as a nutritious snack in providing high level of phenolic compounds for consumers.