

Effects of Drying Methods and Onion Bulb Variety on Physicochemical and Functional Properties of Onion Powder

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Onion (*Allium cepa* L.) is a rich source of constituents that are beneficial to human health. However, the short shelf life of these vegetables are a major cause of postharvest losses during peak harvesting season. Drying is one of the most convenient technologies for shelf stable food products production. This study is aimed at assessing the effects of three drying methods (industrial oven, electric dryer and sun drying) on physicochemical (moisture content, ash content, pH, titratable acidity, total polyphenol contents) and functional properties (water solubility and particle sizes) of onion powders of two onion varieties (white and violet of galmi). From the results obtained, physicochemical and functional components are affected significantly ($P<0.05$) by drying process but not titratable acidity (to the order of 36 mEq/100g DM). In addition, the moisture content of onion powders were below 13.66 ± 0.115 , 14.73 ± 0.115 , 14.60 ± 0.305 g/100g WM for industrial oven, electric dryer and sun drying respectively with pH between 3.29 and 5.16. In addition, these powders showed a small particle size (under 400 μ m) and high solubility as 93.33 ± 2.3 , 72 ± 0.5 , 62.66 ± 2.3 g/100 g DM for Electric dryer (ED), Industrial oven (IO) and Sun drying (SD) respectively. Furthermore, polyphenol content was almost different in all the different drying process with values between 721.32 to 962.26 mg GAE/100g DM. Moreover, all properties were varied significantly ($P<0.05$) between white and violet of galmi powders. The preferred drying method and onion variety were industrial oven and violet of galmi. Finally, these results could be a valorization way to promote an industrialization of onion powders.

Keywords: Onion; drying methods; variety vegetable; functional ingredients; total polyphenols.