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Book of Abstracts



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Irradiation and storage time effects on chemical parameters of *Agaricus bisporus* Portobello

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Mushrooms are one of the most perishable products and tend to lose quality right after harvest. The short shelf-life of mushrooms (1-3 days at room temperature) is an impediment to the distribution and marketing of the fresh product. Treatment by irradiation emerges as a possible conservation technique that has been tested successfully in several food products and increases the extractability of some bioactive compounds [1,2]. The present work reports the effects of gamma radiation and storage period (0, 4 and 8 days) on the chemical composition of one the most widely cultivated mushrooms, *Agaricus bisporus* Portobello; specifically, free sugars, ergosterol and organic acids. The irradiations were performed in an experimental ⁶⁰Co equipment at the doses of 1, 2 and 5 kGy and a dose rate of 1.4 kGy/h. Free sugars and ergosterol were determined using high performance liquid chromatography coupled to a refraction index and UV detector, respectively, while organic acids were determined using ultrafast liquid chromatography coupled to a diode array detector. The results shown that storage period had a higher effect on all the evaluated parameters than the tested radiation doses. It was possible to observe preservation of the fructose, mannitol and trehalose contents in the irradiated samples, along storage time. A higher ergosterol level was found by applying the doses of 1 kGy. All the applied doses also preserved the total organic acids (oxalic, quinic and malic acids) in relation to the control sample. These results indicated the potential of using gamma rays in order to increase the extraction of specific compounds also suggesting to be a feasible alternative process to ensure the quality and prolong the shelf life of mushrooms, since the effects on the tested parameters were less significant than that caused by the storage time.

References

- [1] Fernandes, Â.; Antonio, A.L.; Oliveira, M.B. P.P.; Martins, A.; Ferreira, I.C.F.R. Food Chemistry 2012, 135, 641–650.
 [2] Pereira, E.; Barros, L.; Dueñas, M.; Antonio, A.L., Santos-Buelga, C.; Isabel C.F.R. Ferreira. Industrial Crops and Products 2015, 74, 144-9.

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