

# Gamma irradiation improves the nutritional profile of dried and sliced wild *Boletus edulis* Bull.

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## Introduction

*Boletus edulis* Bull. is a seasonal mushroom with high perishability (shelf-life: 1-3 days at room temperature) [1]. Drying is a widely used postharvest technology, which overcomes those problems. Nevertheless, after slicing, mushrooms need special care to keep their quality [2]. A possible treatment is applying ionizing radiation.

## Methodology

Herein, the effects of gamma irradiation (2, 6 and 10 kGy) on nutritional parameters were analyzed in wild *B. edulis* dried and sliced samples (Bragança, Northeast of Portugal, 2013). Irradiation was performed at Gamma-Pak Sterilizasyon (Çerkezköy, Turkey). The nutritional parameters were determined throughout the storage time (0, 6 and 12 months) according to official procedures. The results were compared considering the mean value of each storage time (ST), including all gamma irradiation (GI) doses, and also the mean value of each dose, with all ST included, allowing verifying the effect of each factor independently.

## Results

Despite the detected significance in the interaction among ST and GI for all assayed factors, some defined conclusions were obtained: fat, protein and ash contents gave maximal contents in samples irradiated with 10 kGy, while the lowest values were detected in non-irradiated samples. Regarding the effect of ST, these same parameters presented minimal values in samples stored during 12 months. The variation in carbohydrates, which was calculated by difference, was precisely the opposite of the previously described. The variation in energy was less pronounced for both effects.

	Fat (g/100 g dw)	Proteins (g/100 g dw)	Ash (g/100 g dw)	Carbohydrates (g/100 g dw)	Energy (kcal/100 g dw)	
Storage time (ST)	0 months	3±1	10±1	5.4±0.2	81±2	395±4
	6 months	3.0±0.5	10±1	5.2±0.4	82±2	394±2
	12 months	2.7±0.5	9±1	4.9±0.5	84±2	394±1
	<i>p</i> -value	<0.001	<0.001	<0.001	0.001	0.404
Gamma Irradiation (GI)	0 kGy	2.2±0.2	8±1	4.6±0.5	85±2	393±1
	2 kGy	2.5±0.2	9.9±0.5	5.2±0.2	82±1	392±1
	6 kGy	3.2±0.1	10±1	5.4±0.2	81±1	395±1
	10 kGy	3.9±0.5	10±1	5.5±0.2	81±1	397±3
	<i>p</i> -value	<0.001	<0.001	<0.001	<0.001	<0.001
ST × GI	<i>p</i> -value	<0.001	<0.001	<0.001	<0.001	<0.001

Table 1. Proximate composition of slice *B. edulis* submitted to different gamma irradiation doses (GI) and stored during distinct periods (ST). The results are presented as mean±SD.

## Conclusion

Overall, irradiation treatment, particularly the 10 kGy dose, tended to improve the nutritional profile of sliced-dried *B. edulis* samples.

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