

# Nutritional properties of mushrooms are better preserved when they are grilled or microwaved

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Grilled and microwaved mushrooms do not lose nutritional properties. Credit: SINC

A study by Spanish researchers has shown that microwaving and grilling are the best processes to maintain the nutritional profile of mushrooms.

Mushrooms are considered valuable health foods, since they have a significant amount of dietary fiber and are low in calories and fat. Moreover, they have high protein content (20 to 30 percent of dry matter), which includes most of the essential amino acids; they also provide a nutritionally significant content of vitamins (B1, B2, B12, C, D and E) and trace minerals such as zinc or selenium. Mushrooms are also an important source of biologically active compounds with potential medicinal value such as beta glucans.

Most mushrooms are commonly cooked before being consumed. Scientists from the Mushroom Technological Research Center of La Rioja (CTICH) aimed to evaluate the influence of different cooking methods (boiling, microwaving, grilling and frying) on proximate composition, beta glucans content and antioxidant activity of four cultivated mushrooms species.

The study was conducted on the most widely consumed mushrooms worldwide: *Agaricus bisporus* (white button mushroom), *Lentinula edodes* (shiitake), *Pleurotus ostreatus* (oyster mushroom) and *Pleurotus eryngii* (king oyster mushroom). They were harvested from the cultivation rooms at CTICH facilities. After the cooking process, raw and cooked mushrooms were then freeze-dried, and the proximate composition and the antioxidant activity were analyzed.

The results of this study, published in the *International Journal of Food Sciences and Nutrition*, revealed that frying induced more severe losses in protein, ash, and carbohydrate content but increased fat and energy. Boiling improved the total glucans content by enhancing the beta glucans fraction. A significant decrease was detected in the antioxidant activity, especially after boiling and frying, while grilled and microwaved

mushrooms reached higher values of antioxidant activity.

"Frying and boiling treatments produced more severe losses in proteins and [antioxidant compounds](#), probably due to the leaching of soluble substances in the water or in the oil, which may significantly influence the [nutritional value](#) of the final product," says Irene Roncero, one of the authors of the paper.

## **The advantages of grilling or microwave cooking**

"When mushrooms were cooked by microwave or grill, the content of polyphenol and antioxidant activity increased significantly, and there are no significant losses in nutritional value of the cooked mushrooms," says Roncero.

The researcher clarifies that adding a little oil while grilling mushrooms is not a problem. "This minimal amount will not cause nutrient losses by leaching; in fact, the antioxidant capacity can be even improved. Moreover, if olive oil is used, the fatty acid profile of the final preparation is enhanced with barely any increase in the calorie [content](#)."

Roncero underlines that the cooking technique clearly influences the nutritional value and the antioxidant activity of mushrooms so that "the adequate selection of the culinary method is a key factor to preserve the nutritional profile of this highly consumed food."

In this study the CTICH collaborated with the Estacion Experimental del Zaidin (CSIC, Granada) to analyze the [antioxidant activity](#) of the raw and cooked [mushrooms](#).

**More information:** Irene Roncero-Ramos et al. Effect of different cooking methods on nutritional value and antioxidant activity of cultivated mushrooms, *International Journal of Food Sciences and*

*Nutrition* (2016). [DOI: 10.1080/09637486.2016.1244662](https://doi.org/10.1080/09637486.2016.1244662)

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