

# Effect of modified atmosphere packaging on selected functional characteristics of *Agaricus bisporus*

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European Food Research and Technology 247: 829–838. (2021)

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## Abstract

Mushrooms are proven as a functional food due to their numerous beneficial effects on human health. Contemporary consumers purchase cultivated mushrooms that spend some time on the shelf, which makes it questionable whether this food can still be called “functional”. An examination was performed on selected characteristics of white and brown (Portobello) *Agaricus bisporus* stored in commercial (air) and three modified atmosphere packagings (MAP): high nitrogen, low carbon dioxide and low oxygen packaging. The amount of ascorbic acid decreased throughout 22 days for both varieties, especially in the white variety stored in commercial packaging. Similarly, total flavonoids decreased, although not to a significant degree. Metal chelating ability was pronounced throughout the storage period, with minor changes in the case of the brown variety. Diabetes-connected enzymes were inhibited by *A. bisporus*, while inhibition was significantly higher toward  $\alpha$ -amylase. Nitrogen-rich packaging suppressed  $\alpha$ -amylase and stimulated  $\alpha$ -glucosidase in the white strain. Both the commercial packaging and the MAP samples exhibited changes in their functional characteristics over three weeks of cold storage. MAP, especially the low oxygen packaging, provided the best option for the preservation of the majority of functional characteristics examined in this research. Enzymes activities appeared to be more specifically tuned, and dependent on parameters not covered here. Brown variety was more resistant to environmental changes with respect to its functional characteristics.