

**Title** Effects of chitosan-based coating and modified atmosphere packaging (MAP) on browning and shelf life of fresh-cut lotus root (*Nelumbo nucifera* Gaerth)

**Author** Yage Xing, Xihong Li, Qianlian Xu, Yunhong Jiang, Juan Yun and Weili Li

**Citation** Innovative Food Science & Emerging Technologies, Volume 11, Issue 4, October 2010, Pages 684-689

**Keywords** Lotus root; Antibrowning agents; Chitosan coating; Modified atmosphere packaging

### Abstract

The present study investigated the effect of chitosan coating containing antibrowning agents and modified atmosphere packaging (MAP) on the browning and shelf life of fresh-cut lotus root stored at 4 °C for 10 days. The atmosphere in the packages was evaluated for O<sub>2</sub> and CO<sub>2</sub> concentrations. The browning on the surface of lotus root slices was prevented by chitosan-based coating and MAP treatment. *L*\* values of coated + MAP and control samples were 68.8 and 48.9 after 8 days storage, respectively. For *a*\* and *b*\* values, samples of coated + MAP treatment had the slowest increasing trends among all the treatments. At the end of storage, the coated + MAP samples exhibited the lowest polyphenol oxidase (PPO) activity and malondialdehyde (MDA) content. Its highest overall visual quality (OVQ) scores (> 7) demonstrated that chitosan-based coating + MAP treatment could provide a better inhibitory effect on the browning and extend the shelf life of fresh-cut lotus root.

*Industrial relevance:* Fresh-cut vegetables have drawn the attention of industry as a novel lightly processed product. Both edible coating and MAP treatment cause changes in atmosphere composition and respiration rate of lotus root slices. This combined treatment could be used to control the browning and improve the storage life of this fresh-cut vegetable. This information could be useful for the development of novel application to edible coating and MAP design for lightly processed lotus root.