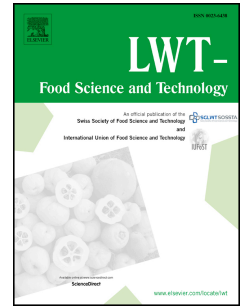


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Effect of mild heat treatment on shelf life of fresh lotus root

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1 **Effect of Mild Heat Treatment on Shelf Life of Fresh Lotus Root**

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10 **Abstract**

11 Heat treatments of fresh lotus root (*Nelumbo nucifera* G.) at 40, 50 and 60 °C
12 effectively prevented moisture loss, browning and microbial growth but increased
13 soluble solids, total volatile compounds and firmness during storage at 25 °C for
14 15 d (p<0.05). Polyphenol oxidase (PPO) and peroxidase (POD) activities and PPO
15 electrophoretic band intensities (100 kDa) were minimally affected by the treatments.
16 Results indicate that enzyme deactivation is not the dominant factor in the inhibition of
17 browning that occurred during the storage of heat treated tubers and that other
18 factors such as heat-induced substrate modifications could significantly contribute to
19 this effect. Peroxidase heat shock proteins (Hsp) were detected at 60, 70 and 120 kDa
20 in treated samples. The enhanced Hsp protective response and firmness retention in 60
21 °C treated samples indicate that this is the optimum treatment temperature for
22 improving lotus root postharvest storage quality and shelf life.

23 **Keywords:** lotus root, physical treatment, texture, protein, postharvest life

24 ¹Shuyi Li and Xiaojin Li contributed equally to the manuscript

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