

Effects of moderate electric fields on the post-harvest preservation of chestnuts

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Abstract

Ohmic heating (OH) was evaluated as a post-harvest technology to improve chestnuts' shelf-life (*Castanea sativa* Mill.) by controlling molds and insect larvae proliferation. Chestnuts were processed by OH at 35, 45, and 55 °C and compared with untreated fruits and the conventional hydrothermal technology (HT - 50 °C for 45 min), which is the process currently used by the chestnut industry. Shelf-life studies were carried out at different atmospheric conditions for 60 days: (i) 25 °C and 40% relative humidity (RH); (ii) 5 °C and 70% RH. The results show that the OH conducted at 55 °C (OH-55 °C), combined with storage at 5 °C, was more effective in controlling molds and larvae growth than the other treatments. Moreover, under these conditions, chestnuts' shelf-life could be extended for 60 days without substantial changes in the fruits' color and texture. After the OH-55 °C treatment, lower losses of some nutrients and vitamin C were registered compared to HT. This study demonstrates for the first time that OH has the potential to be used by the chestnut industry for the post-harvest disinfestation of this fruit.