Storage Temperature and Packaging Determine the Physiological Behaviour and Quality Attributes of Round-Shaped Baby Carrots

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The quality of baby carrots is dramatically influenced by factors such as preparation of raw material, packaging, and storage conditions. Recently, Embrapa has developed a new technology to process round-shaped baby carrots. The present work was carried out aiming to evaluate the physiological behavior and the quality attributes of round-shaped baby carrots during storage. Carrots (Daucus carota L.), cultivar Alvorada, were harvested at Embrapa Vegetables experimental fields, taken to the postharvest laboratory and minimally processed as round-shaped baby carrots. After processing, the material was packed in two packaging systems – low density polyethylene (LDPE) and multilayer nylon – and stored at 5 and 10°C for 20 days. Respiratory activity was evaluated for 4 hours after processing. Every 5 days, β-carotene, total soluble solids and the development white blush were assessed. It was verified that at the fourth hour after processing, round-shaped baby carrots stored under 10°C had a respiratory activity that was 110% higher than the intact material stored at the same temperature. White blush increased dramatically during the first five days of storage. At the end of the storage period, white blush index of the material stored in LDPE films was 32% higher than the same index for the carrots stored in multilayer nylon, for both temperatures. The reduction in β-carotene content was more pronounced in round-shaped baby carrots stored under 10°C than 5°C. Despite storage temperature, baby carrots stored in LDPE plastic films showed a higher content of total soluble solids, what is a clear indication that the material packed in this type of plastic film lost more water than the other treatments.