

Title Physio-biochemical changes in lettuce stored at ambient temperature with prior storage at low temperature

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Abstract

This investigation shows the effects of cool storage temperature and duration of storage on the physio-biochemical changes in lettuce heads that are kept at 1°C for 0, 7 and 14 days and subsequently transferred to 25°C for 10 days to simulate retail market display. After transferring to high temperature, lettuce heads with prior storage at low temperature for 14 days showed higher relative weight loss but lower respiration rate than those stored for 7 days or control sample. The decreases in hue angle value were almost similar for control and 7 days sample without any change up to four days and then decreased rapidly, but 14 days stored sample started degreening gradually from the beginning. Glutamine synthetase (GS; EC 6.3.1.2) activity in the outer leaf portion was maintained until the second day of storage at high temperature. Other than, in both portions, GS activity decreased gradually in all samples, therefore negative correlation was found between GS activity and ammonia content. Glutamate dehydrogenase (GDH; EC 1.4.1.2) amination activity was substantially higher than GDH deamination activity regardless of tissue type and storage duration. Significant increase in GDH amination activity was observed in outer leaf tissues of control and 7 days sample. However, no significant change was observed in any portion of 14 days sample and in the inner leaf tissues of control and 7 days samples. GDH deamination activity did not change significantly in any portion of any sample. GDH amination could therefore play more important role in ammonia assimilation. Lettuce heads stored for 14 days at low temperature showed lower physio-biochemical changes after holding at high temperature which suggested permitting long time low temperature storage before exporting or simulating retail sale.