

Title Chlorophyll *a* fluorescence measurements to evaluate storage time and temperature of Valeriana leafy vegetables

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Abstract

The quality of leafy vegetables has to be guaranteed for consumers for the whole postharvest period, usually limited to 5–7 days. The quality of vegetables during storage is difficult to determine. The aim of this work was to evaluate the quality status of leafy vegetables by means of chlorophyll *a* fluorescence measurements. Experiments were performed on *Valeriana* lettuce stored at 4 or 10 °C for 15 days. The quality of the lettuce was evaluated by measuring anthocyanins, chlorophyll, carotenoids, phenols and chlorophyll *a* fluorescence. JIP analysis was performed at the intermediate points of the fluorescence induction curve. Results show that the higher storage temperature affected the lettuce leaf quality. Significant chlorophyll reduction was observed after only 5 days of storage in leaves stored at 10 °C. Total carotenoids significantly decreased after 8 days at both storage temperatures. Anthocyanins and total phenols did not change statistically during the entire experimental period. Fv/Fm and Fm measurements were able to be used to show changes that took place during the storage period, but were not to discriminate between the two storage temperatures. Among the calculated JIP indices, only PI, DIO/CS, ABS/DIO, ETO/DIO and RC/CSm were able to highlight differences during storage and between the two storage temperatures, and may be used as markers to evaluate the status of leaf during leafy vegetable storage. The highest value of R^2 was found for ETO/DIO versus storage time.