

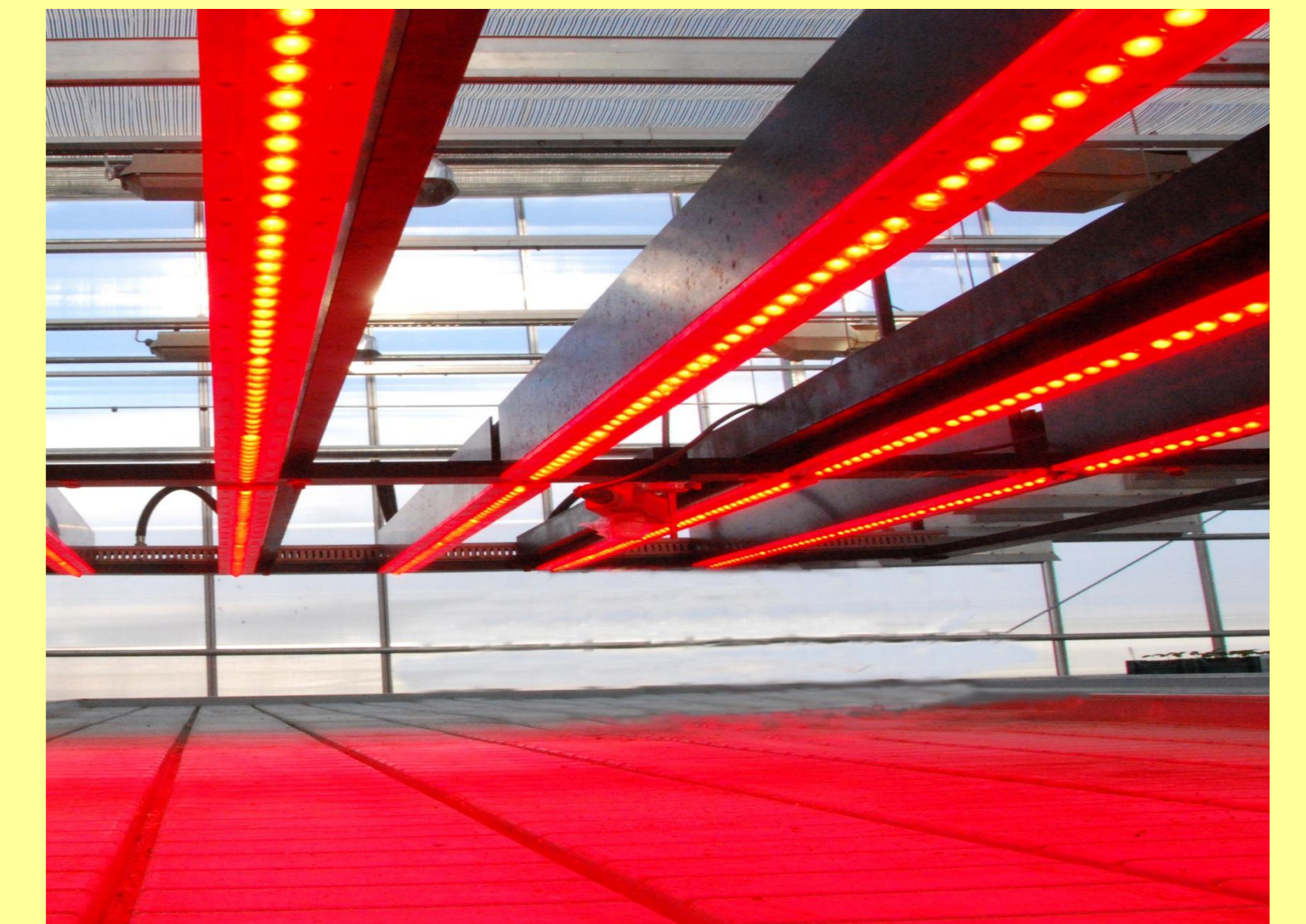
The after-effect of red LEDs on changes of nutritional quality in leafy radish during storage

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The aim of studies was to evaluate after-effect of supplementary short-term red-LEDs lighting on changes of nutritional quality in leafy radish during storage.

Materials and methods. Two varieties of leafy radish (*Raphanus sativus* L. 'Rioja Improved' (red leaves) and 'Sangria' CN LRAD 1801 (green leaves) were grown to harvest time (10 days) within a greenhouse (Lithuania, lat. 55° N, 2011) in a peat substrate under daylight with supplementary lighting provided by standard high-pressure sodium lamps (HPS) (16-h). At the pre-harvest stage of 3 days, the HPS lamps were supplemented by a solid-state illuminator (16-h) contained red AlGaInP LEDs with the peak wavelength of 638 nm. PPFD level in combination with the HPS lamps was maintained at 300 $\mu\text{mol m}^{-2} \text{s}^{-1}$. After harvesting leafy radishes were stored for 2, 4 and 8 days in the refrigerator at +4°C.

Results



Red 638 nm AlGaInP LEDs lamp in greenhouse



Leafy radish 'Rioja Improved' under HPS (K 300) and HPS+638 nm (R)

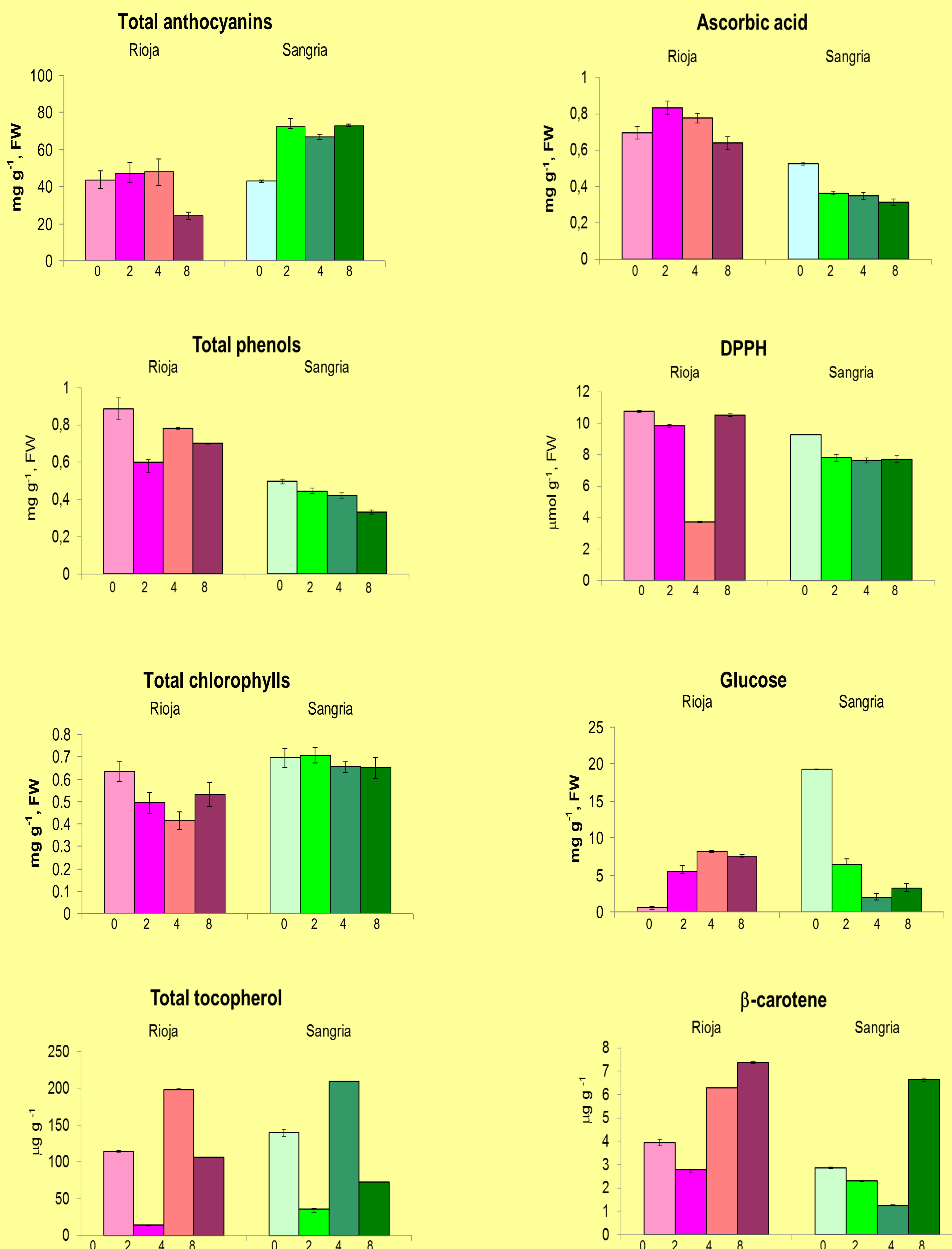


Figure. Changes of nutritional quality in leafy radish during storage. (0, 2, 4, 8 – days after-effect of red 638 nm LEDs. FW – fresh weight)

Conclusions. Our results showed that after-effect of supplementary red LED light on changes of nutritional quality was found to be variety dependent. The content of total anthocyanins (43.9%) and ascorbic acid (8.2%) decreased at 8th day of storage in 'Rioja Improved'. Meanwhile, content of total anthocyanins (68.1%) and ascorbic acid (30.6%), total phenols (10.6%) and DPPH free-radical scavenging capacity (15.8%) decreased in 'Sangria' at 2nd day of storage and remained at almost the same level throughout the whole storage time. Total carbohydrates increased in 'Rioja Improved' and decreased in 'Sangria' during storage. Total tocopherols and carotenoids drastically decreased at 2nd day of storage and increased at 4th day of storage in both varieties.

Acknowledgements.

This research was funded by a grant (No. SVE-03/2010) from the Research Council of Lithuania