Abstract:

Effects of pretreatments with 0.4 M sucrose for 24 h and consecutive post-treatments with 0.1 M trehalose on growth and senescence of the florets on cut gladiolus spikes were examined. Sugar contents and ion leakage in the perianths of 1st, 4th and 8th florets on the spikes were determined. Pretreatment with sucrose increased sugar contents and promoted unfolding of florets. Treatments with trehalose delayed both unfolding and senescence of florets. Trehalose treatments alleviated the decrement of soluble sugars in senescing perianths. The ratio of sucrose to hexose (fructose+glucose) in the perianths gradually raised concomitant with senescence; it was remarkably increased by trehalose, suggesting that trehalose inhibited exports of sucrose from the perianths to other flower parts. Ion leakage of 4th and 8th perianths treated with trehalose was higher than that of control until 4 days after harvest (DAH), while it became significantly lower than that of control 6 DAH. In marginal parts of trehalose-treated perianths, ion leakage was high, and water soaked tissues and slight wilting were observed. Trehalose is effective in delaying floret senescence and combined treatment with sucrose and treatments at lower trehalose concentration is recommended to improve quality of cut gladiolus spikes.