

Study of enzymatic activity and proline change in potted mini carnation (*Dianthus caryophyllus* L.) flowers under ethylene stress

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Abstract

This study was performed to evaluate the role of ethylene stress, ethylene inhibitors and action treatments on longevity of potted-carnation flowers. For this purpose, first, potted-carnation flowers were pretreated with different concentrations of amino-oxyacetic acid (AOA), benzyladenine (BA) and 1-methylcyclopropene (1-MCP). Then, ethephon (as stress treatment) was sprayed on the pretreated flowers. Results showed that the lowest longevity of carnation flowers (5 and 6 days, respectively) in both studied cultivars ('Silver pink' and 'Lilac on purple') was related to 30 mg/L ethephon. Maximum flower longevity (11.5 days) was related to 'Lilac on purple' cultivar. The 0.6 μ L/L of 1-MCP treatment, in both cultivars, was the most effective treatment in inhibition of ethephon on reduction of flowers longevity. Also, the lowest amount of ethylene production and the highest enzyme activity was observed when the flowers were pretreated by 0.6 μ L/L of 1-MCP before the stress is applied. The highest proline accumulation was related to 30 mg/L ethephon treatment. Maximum α -amylase activity occurred in 30 mg/L ethephon, 10 and 20 mg/L BA and 50 mg/L AOA pretreatments.

Keywords: Antioxidant enzymes, Ethylene inhibitors, Ethephon, Flower longevity.

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