Effect of Jasmonic acid and Salicylic acid on growth and physiological changes of tomato under salinity stress

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Abstract

Jasmonic acid (JA) and salicylic acid (SA) work as a message transfer agent against biotic and abiotic stresses such as salinity. For studing the effect of JA and SA on growth, physiological and photosynthesis changes of tomato under salinity stress, a factorial experiment, based on completely randomized design, was performed in the Research Greenhouses of Isfahan University of Technology. Treatments were different salinity levels (S0= control, S1= 100 mM, S2= 150 mM and S3= 200 mM), different levels of JA (JA1= control, JA2= 1 mM and JA3= 2 mM) and SA (SA1= control and SA2= 10 mM) with 3 replicates. Results showed that SA decreased fresh and dry weight of the shoots in S0 and increased in S3. In S1 and S2 salinity levels, high concentration of JA (JA3) decreased fresh weight of the shoots. Addition of JA increased the Plant antioxidant activity in S0 and S1 and decreased it in S2. The antioxidant activity and prolin content were increased at low levels of salinity and JA and SA application. But, the effects were not significant at high salinity levels. Generally, it seems that using JA and SA at low levels of salinity, which change the photosynthesis and chlorophyll content, was more effective than high salinity levels. Also, lower concentrations of JA was more effective than higher concentrations.

Keywords: Photosynthesis, Stomata activity, Growth regulators.

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