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ENHANCING CHILLING STRESS TOLERANCE OF TOMATO SEEDLINGS BY DROUGHT PRETREATMENT

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Low temperatures lead to numerous physiological disturbances in the cells of chilling-sensitive plants and result in chilling injury and death of tropical and subtropical plants such as tomatoes. In this study, the possibility of chilling tolerance enhancing of tomato seedling by drought pretreated with 10 or 20% PEG for 7 days or not was investigated in the greenhouse of agricultural faculty of Bu-Ali Sina University, Hamedan at 2015. After drought, the seedlings were subjected to chilling 6 h/day at 3°C for 6 days. Results showed that drought pretreatment improved growth rate of tomato seedling subjected to chilling stress and improved chlorophyll content net photosynthesis, stomatal conductance, transpiration, and internal CO_2 concentration and decreased electrolyte leakage compared with the control at the end of chilling stress. The highest cold tolerance was obtained with 20% PEG application. In general, results indicate that drought pretreatment could be used effectively to protect tomato seedling from damaging effects of chilling at the early stages of growth.

Keywords: Photosynthesis, Electrolyte leakage, Hardening, stomatal conductance, transpiration.