عنوان مقاله:

Salicylic acid and methyl jasmonate enhance drought tolerance in chamomile plants

محل انتشار:

Journal of Herbmed Pharmacology, دوره 3, شماره 2 (سال: 1393)

تعداد صفحات اصل مقاله: 6

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خلاصه مقاله:

Introduction: The dried flowers of chamomile contain many terpenoids and flavonoids contributing to its medicinal properties. Salicylic acid (SA) and methyl jasmonate (MeJA) have antioxidant properties and function as direct radical scavengers. Two Matricaria chamomilla cultivars (Bodgold and Hungary breed seeds) were used in this study to investigate the effects of exogenous application of SA and MeJA on protection against drought stress as well as on changes of malone dialdehyde (MDA) and electrolyte leakage index (ELI), and the fluctuation of proline and soluble sugars content in the leaves under drought stress. Methods: The experiment was conducted in a factorial design based on randomized complete blocks with three replicates. Chamomile plants were treated by two levels of drought stress as well as two different levels of MeJA (i.e., ۰.۰ and ۱۰۰ μM) and SA (i.e., ۰.۰ and ۰.۵ mM) solutions. Results: There was a dramatic drought induced increase in the MDA content (۱۲۸%) and ELI (۴۹%) in the leaves. Deleterious effect of drought stress was more severe in untreated plants than in treated ones. Treatments with SA and MeJA significantly improved drought tolerance in chamomile plants. These treatments effectively maintained membrane integrity, thereby retarding electrolyte leakage and membrane lipid peroxidation (MDA). Treatments with SA and MeJA were also effective in enhancing the antioxidant concentrations of proline and soluble sugars. Conclusion: The production of these antioxidants could have been part of a defence system against drought damage, reducing MDA and ELI and maintaining membrane stability.

کلمات کلیدی: