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PROMOÇÃO:



Ascorbate peroxidase and phenol peroxidase activities are modulated by salt but not drought in cowpea roots

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Plants are frequently submitted to several environmental stresses like drought and salinity. Recent evidences indicate that stress-induced growth inhibition may be due to secondary oxidative stress. To elucidate the involvement of hydrogen peroxide (H₂O₂)-scavenging enzymes on stress-induced growth inhibition, cowpea seedlings were exposed to drought and salinity applied individually or in combination. Four-day-old seedlings grown in paper rolls were submitted to five different treatments during four days under controlled conditions: distilled water (control); 100 mM NaCl (salt); 25% of substrate humidity (drought); 100 mM NaCl during two days followed by distilled water for two days (salt recovery); and 100 mM NaCl during two days followed by drought for two days (salt drought). The salt treatment reduced root elongation and stimulated root branching whereas drought induced inversed effects. However, both processes were strongly inhibited by the salt drought treatment. Root dry weight was similarly reduced by drought and salt applied individually and further decreases were verified in the salt drought combination. The total and apoplastic contents of H₂O₂ were not changed by drought, but they were intensively decreased by salt and salt drought. The total and cytosolic activities of ascorbate peroxidase (APX) as the total and cell-wall activities of phenol peroxidase (POX) remained unaltered under drought. Conversely, total and cytosolic activities of APX were reduced by salt and salt drought, while the total and cell-wall activities of POX were markedly increased under salinity. According to these results, root growth inhibition in cowpea seedlings could not be attributed to secondary oxidative stress under drought, but it could be

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related to changes in the H_2O_2 metabolism under salinity or salinity followed by drought. In this way, the decreased activity of APX was probably compensated by the enhanced activity of POX to remove excessive H_2O_2 produced under salinity in cowpea roots.

Keywords: antioxidative enzymes, cross-stress, hydrogen peroxide, oxidative stress, *Vigna unguiculata*.

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