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PROMOÇÃO:



Nitrate acquisition and assimilation under high NO₃⁻ supply limited by the salinity in cowpea growth

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Salinity reduces plant NO₃⁻ uptake and assimilation through mechanisms still not completely understood. In this study cowpea plants were previously supplied with a non toxic NaCl concentration (50 mM) in order to induce just a salt-induced growth restriction. Afterwards, they were exposed to three concentrations of NO₃⁻ (0, 5 or 10 mM) along 4 days aiming induce strong contrasts in the nitrate supply and to test the ability of salt-treated plants for utilization of a N excess, as compared to untreated plants. Salt stressed plants were able to growth and had higher rate of NO₃⁻ acquisition and assimilation when NO₃⁻ were increased from 0 to 5 mM. When NO₃⁻ concentration was increased from 5 to 10 mM, only salt unstressed plants were able to show a positive response in growth. The response in cowpea growth was positively associated with the protein content in both leaves and roots. Moreover, the salt-induced restriction in cowpea growth and protein content occurred in parallel with a complete restraint in the root NO₃⁻ uptake and leaf nitrate reductase activity under high external nitrate level. This response was positively associated with the NO₃⁻ content in both leaf and root tissues. In contrast to leaves, it was verified a prominent accumulation of total free amino acids, including glutamine, asparagine and proline, in salt-treated roots grown under the highest nitrate level. Taken together, the data obtained evidence that moderate salinity levels can restrict the NO₃⁻ uptake and assimilation by indirect effect via a salt-induced coordination involving growth and N-demand. The accumulation of some amino acids in salt-treated roots might act as negative feedback signalizator controlling the nitrate uptake.

Keywords: nitrate reductase, nitrate uptake, salt stress, amino acids, *Vigna unguiculata*

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