



Abscisic acid-induced nitric oxide and proline accumulation in independent pathways under water-deficit stress during seedling establishment in *Medicago truncatula*

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Titre	Abscisic acid-induced nitric oxide and proline accumulation in independent pathways under water-deficit stress during seedling establishment in <i>Medicago truncatula</i>
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Auteur	Planchet, Elisabeth [1], Verdu, Isabelle [2], Delahaie, Julien [3], Cukier, Caroline [4], Girard, Clément [5], Morère-Le Paven, Marie-Christine [6], Limami, Anis M. [7]
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Résumé en anglais	Nitric oxide (NO) production and amino acid metabolism modulation, in particular abscisic acid (ABA)-dependent proline accumulation, are stimulated in planta by most abiotic stresses. However, the relationship between NO production and proline accumulation under abiotic stress is still poorly understood, especially in the early phases of plant development. To unravel this question, this work investigated the tight relationship between NO production and proline metabolism under water-deficit stress during seedling establishment. Endogenous nitrate reductase-dependent NO production in <i>Medicago truncatula</i> seedlings increased in a time-dependent manner after short-term water-deficit stress. This water-deficit-induced endogenous NO accumulation was mediated through a ABA-dependent pathway and accompanied by an inhibition of seed germination, a loss of water content, and a decrease in elongation of embryo axes. Interestingly, a treatment with a specific NO scavenger (cPTIO) alleviated these water-deficit detrimental effects. However, the content of total amino acids, in particular glutamate and proline, as well as the expression of genes encoding enzymes of synthesis and degradation of proline were not affected by cPTIO treatment under water-deficit stress. Under normal conditions, exogenous NO donor stimulated neither the expression of P5CS2 nor the proline content, as observed after PEG treatment. These results strongly suggest that the modulation of proline metabolism is independent of NO production under short-term water-deficit stress during seedling establishment.
URL de la notice	http://okina.univ-angers.fr/publications/ua7964 [14]
DOI	10.1093/jxb/eru088 [15]

Liens

- [1] <http://okina.univ-angers.fr/elisabeth.planchet/publications>
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=12209](http://okina.univ-angers.fr/publications?f[author]=12209)
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