

Amine oxidases of *Arabidopsis thaliana* are potential candidates of abscisic acid signalling

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Polyamines (PAs) are essential growth regulators present in all living organisms. PAs are oxidatively catabolized by two groups of amine oxidases namely copper-binding diamine oxidases (CuAO) and FAD-binding polyamine oxidases (PAO). Seven genes coding for *CuAO* and five genes coding for *PAO* are identified in *Arabidopsis*. PAs and amine oxidases play an array of roles in physiological processes of plant growth and development and in plant abiotic and biotic stress responses.

Potential involvement of *CuAO* and *PAO* was tested for the role in nitric oxide (NO) signalling and ABA-mediated stress responses. Fluorimetric and fluorescence microscopic studies revealed that ABA-induced NO production was impaired in knockouts of *CuAO1* and *PAO2* compared to wild type (WT). The observations suggest possible functions of *CuAO1* and *PAO2* in ABA-mediated NO signalling. Further, ABA-induced H₂O₂ production was impaired in the knockouts indicating role of *CuAO1* and *PAO2* in H₂O₂ production. Morphological analysis with the knockouts and over-expressors showed differential sensitivity to exogenous application of ABA during seed germination, seedling establishment and root development. The results of ABA-induced NO production and growth responses suggest *CuAO1* and *PAO2* as potential signaling candidates linking ABA and NO.

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