



BASIC AMINO ACID CARRIER 2 gene expression modulates arginine and urea content and stress recovery in Arabidopsis leaves

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Titre	BASIC AMINO ACID CARRIER 2 gene expression modulates arginine and urea content and stress recovery in Arabidopsis leaves
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Auteur	Planchais, Severine [1], Cabassa, Cécile [2], Toka, Iman [3], Justin, Anne-Marie [4], Renou, Jean-Pierre [5], Savouré, Arnould [6], Carol, Pierre [7]
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Résumé en anglais	<p>In plants, basic amino acids are important for the synthesis of proteins and signaling molecules and for nitrogen recycling. The Arabidopsis nuclear gene BASIC AMINO ACID CARRIER 2 (BAC2) encodes a mitochondria-located carrier that transports basic amino acids in vitro. We present here an analysis of the physiological and genetic function of BAC2 in planta. When BAC2 is overexpressed in vivo, it triggers catabolism of arginine, a basic amino acid, leading to arginine depletion and urea accumulation in leaves. BAC2 expression was known to be strongly induced by stress. We found that compared to wild type plants, bac2 null mutants (bac2-1) recover poorly from hyperosmotic stress when restarting leaf expansion. The bac2-1 transcriptome differs from the wild-type transcriptome in control conditions and under hyperosmotic stress. The expression of genes encoding stress-related transcription factors (TF), arginine metabolism enzymes, and transporters is particularly disturbed in bac2-1, and in control conditions, the bac2-1 transcriptome has some hallmarks of a wild-type stress transcriptome. The BAC2 carrier is therefore involved in controlling the balance of arginine and arginine-derived metabolites and its associated amino acid metabolism is physiologically important in equipping plants to respond to and recover from stress.</p>
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