



Redox regulation of auxin signaling and plant development in Arabidopsis.

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Abstract:

Thioredoxin (NTR/TRX) and glutathione (GSH/GRX) are the two major systems which play a key role in the maintenance of cellular redox homeostasis. They are essential for plant development, cell division or the response to environmental stresses. In a recent article, we studied the interplay between the NADP-linked thioredoxin and glutathione systems in auxin signaling genetically, by associating TRX reductase (*ntra ntrb*) and glutathione biosynthesis (*cad2*) mutations. We show that these two thiol reduction pathways interfere with developmental processes. This occurs through modulation of auxin activity as shown by genetic analyses of loss of function mutations in a triple *ntra ntrb cad2* mutant. The triple mutant develops almost normally at the rosette stage but fails to generate lateral organs from the inflorescence meristem, producing almost naked stems that are reminiscent of mutants affected in PAT (polar auxin transport) or biosynthesis. The triple mutant exhibits other defects in processes regulated by auxin, including a loss of apical dominance, vasculature defects and reduced secondary root production. Furthermore, it has lower auxin (IAA) levels and decreased capacity for PAT, suggesting that the NTR and glutathione pathways influence inflorescence meristem development through regulation of auxin transport and metabolism. Redox regulation of auxin signaling and plant development in Arabidopsis. Available from: http://www.researchgate.net/publication/50596397_Redox_regulation_of_auxin_signaling_and_plant_development_in_Arabidopsis [accessed Jun 21, 2015].

Published In:

Plant signaling & behavior , 6 (1) , 117-119