Sublethal Cadmium Intoxication In Arabidopsis thaliana Impacts Translation at Multiple Levels

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Résumé en anglais	To study the impact of translational regulation during heavy metal poisoning, Arabidopsis thaliana cell cultures were submitted to sublethal cadmium stress. At the concentration used, cadmium had a minimal impact on the growth of the culture but induced an accumulation of high molecular weight polysomes without de novo production of new ribosomes together with a reduction of protein synthesis. In addition, cadmium stress induces phosphorylation of eukaryotic initiation factor 2α by GCN2 and, in planta, gcn2 mutants are more sensitive to cadmium stress, suggesting a role for this translational regulation mechanism in the response to cadmium stress. Microarray analysis of total and polysomal RNAs in control and cadmium-treated cells reveals a large class of genes for which a variation in total RNA abundance is not linked to a variation in polysomal loading, suggesting that transcription and translation are uncoupled and that these genes are not recruited at the initiation step of translation.
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