



## Carotenoid gene expression explains the difference of carotenoid accumulation in carrot root tissues

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Mots-clés	Daucus carota L. [11], Phloem [12], Pigment [13], transcriptional regulation [14], Xylem [15]
Résumé en anglais	<p>The carrot root is well divided into two different tissues separated by vascular cambium: the secondary phloem and xylem. The equilibrium between these two tissues represents an important issue for carrot quality, but the knowledge about the respective carotenoid accumulation is sparse. The aim of this work was (i) to investigate if variation in carotenoid biosynthesis gene expression could explain differences in carotenoid content in phloem and xylem tissues and (ii) to investigate if this regulation is differentially modulated in the respective tissues by water-restricted growing conditions. In this work, five carrot genotypes contrasting by their root color were studied in control and water-restricted conditions. Carotenoid content and the relative expression of 13 genes along the carotenoid biosynthesis pathway were measured in the respective tissues. Results showed that in orange genotypes and the purple one, carotenoid content was higher in phloem compared to xylem. For the red one, no differences were observed. Moreover, in control condition, variations in gene expression explained the different carotenoid accumulations in both tissues, while in water-restricted condition, no clear association between gene expression pattern and variations in carotenoid content could be detected except in orange-rooted genotypes. This work shows that the structural aspect of carrot root is more important for carotenoid accumulation in relation with gene expression levels than the consequences of expression changes upon water restriction.</p>
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### Liens

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