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Analysis of the Expression of Mannose-6-Phosphate Reductase Gene in Roots of Different Clones of *C. canephora* submitted to Water Deficit.

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Previous studies already reported up-regulated expression of M6PR (mannose-6-phosfatase reductase)-encoding genes in leaves of *C. canephora* (Marraccini*et al.*, 2012) and *C. arabica*(Freire *et al.*, 2013; de Carvalho*et al.*, 2014) grown in greenhouse or in field conditions under drought stress.

Rationale

Our study aims to evaluate the expression of the *CcM6PR* gene in roots of drought-tolerant (14, 73 and 120) and drought-susceptible (22) clones of*C. canephora*Conilon (Marraccini et al., 2012)grown in greenhouse with or without controlled water limitations.

Methods

For each clone and water condition, total RNA was extracted from roots and the transcriptome profiles was evaluated using 454 sequencing, allowing expression of *CcM6PR* gene *in silico* by electronic *northern*between drought-susceptible and drought-tolerant clonesunderirrigated and non-irrigated conditions.Expression of *CcM6PR* gene in roots of these clones was also checked by real-time qPCR analyses.

Results

In silico analysis suggested up-regulated expression of *CcM6PR* gene under drought in rootsof bothdrought-tolerant and drought-susceptible clones of*C. canephora*. Such up-regulated expression of *CcM6PR* gene under drought was validated by real-time qPCR, mainly in roots of the drought-tolerant clone 14, and to a lesser extent, in those of drought-tolerant (73 and 120) and drought-susceptible (22) clones of*C. canephora*.

Conclusions & Perspectives

Drought-induced expression of *M6PR* gene was also reported to occur in other higher plants, therefore suggesting that mannitol metabolic pathwayplays important roles in protecting coffee roots against water limitation.

References

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