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GENE EXPRESSION CHANGES IN LEAVES OF GRAFTED TOMATO SEEDLINGS INDUCED BY FUNNELIFORMIS MOSSEAE TREATMENT

CARADONIA F.*, BUTI M.**, FLORE A.*, MORCIA C.***, RONGA D.****, TERZI V.***, FRANCIA E.*, MILC J.*

*) Department of Life Sciences, University of Modena and Reggio Emilia
**) Department of Agriculture, Food, Environment and Forestry, University of Florence
***) CREA-GB, Center for Genomics and Bioinformatics
****) DIFARMA, University of Salerno

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Tomato (*Solanum lycopersicum* L.) is one of the most economically important horticultural crops, and has been a model species for physiology, molecular genetics and genomics studies for a long time. Arbuscular mycorrhizal fungi (AMF) can establish symbiotic relationships with the roots of many agricultural crops boosting nutrient uptake and sugar accumulation in fruits, and enhancing tolerance against abiotic and biotic stresses. However, little information is available about gene expression in the leaves of grafted tomato plants when their roots are colonized with AMF *Funneliformis mosseae*. The majority of available bibliography concerns plants under stress conditions, while our study aimed at examining the arbuscular mycorrhizal symbiosis in greenhouse under optimal condition in order to investigate the molecular responses triggered by the treatment.

In this study, an experimental trial was carried out to investigate the effects of *F. mosseae* symbiosis on the transcriptome profile of grafted tomato seedling leaves. Tomato seedlings were transplanted in pots filled with neutral peat 15 days after grafting, while AMF were mixed with peat before transplanting.

Total RNA was isolated from leaves of treated and not treated grafted tomato seedlings grown under optimal conditions 35 days after inoculation (corresponding to “flowering” growth stage) with *F. mosseae*. Gene expression data were obtained through RNA sequencing with an Illumina

platform. RNA-Seq data elaboration and differential expression analysis between inoculated and control seedlings revealed that transcription rate of 179 genes was influenced by AMF colonization. MapMan classification of these genes allowed the identification of the following categories as modulated by the tomato seedlings interaction with *F. mosseae*: ‘abiotic and biotic stress’, ’transport’, ‘regulation of transcription of RNA’ and ‘protein post-translational modifications’. In order to better understand the influence of AMF inoculation on tomato seedlings roots at early growth stage, further analyses focusing on specific genes and/or gene families are being performed.