ISOLATION OF MOLECULAR MARKERS FOR THE EVALUATION OF QUALITY IN PRE-HARVEST AND POST-HARVEST STAGES IN ROCKET AND MELON

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The development of rapid, reliable and specific methods are necessary for the evaluation of quality in ready-to-eat vegetables during the production chain from pre- to post-harvest and storage stages. Since the quality after harvest cannot be improved but only preserved, quality markers must be isolated in order to identify the minimum variation of quality already after the first day of storage. Our objective was to identify stress responsive genes that are associated with quality losses and can be used as quality markers in both rocket (*Diplotaxis tenuifolia* L.) and melon (*Cucumis melo* L.) fresh cut produce.
Quality markers were isolated by transcriptome sequencing (RNA-Seq) in rocket. Rocket plants were grown hydroponically in controlled growth chambers for 3 weeks prior to apply 24 hours stresses. In pre-harvest were imposed salinity (200 mM NaCl), heat radical stress (40°C), nitrate deficiency (absence of NH_4^+/NO_3^-), while in post-harvest were imposed chilling (4°C), wounding, dark and water stress. Total RNA extracted from stressed and control plants was sequenced with a two paired-end Illumina sequencing approach. 10 genes commonly up-regulated in all the stresses and associated with senescence, degenerative processes and quality losses were selected as putative markers. In melon the molecular markers were identified by searching for the homologous genes of the rocket putative markers. The expression levels of these quality markers was analyzed by quantitative Real Time PCR (qRT-PCR) at different time points from harvest to 14 days of storage at 20°C and 4°C in rocket and melon produce. In both species all genes increased their expression soon after harvest indicating that these markers will be useful to evaluate the quality of the produce.