

Title Isolation of genes potentially related to fruit quality by subtractive selective hybridization in tomato

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Abstract

Improved understanding of the genetic and physiological control of quality traits could be helpful for identifying new technological or genetic targets to improve tomato fresh fruit quality and shelf life. This study aimed at screening for genes whose expression varied between lines genetically close but differing for fruit quality, using subtractive and selective hybridization (SSH). A set of 310 unigenes was isolated. The differential expression pattern of the SSH clones between LCx and Levovil, the two lines of the trial, was assessed by macroarray screening, and for 14 of them, by real-time PCR. Their putative functions were identified by BLAST comparison with public EST databases, and were classified on the basis of their function. Thirty nine percent of the unigenes corresponded to proteins which had never been isolated in fruit or with functions in fruit that were not clear or unknown. Among the others, proteins related to oxidative stress responses, calcium-binding proteins, a few cell-wall-related proteins, and several transcription regulators were identified. The SSH unigenes were then compared to the EST set of the tomato array Tom2 developed from public resources. The BLAST comparison revealed that 41% of the unigenes were not included in this set. This result revealed that our study emphasizes genes that would not have been considered with commercially available microarrays, and that constitute new targets for fruit quality control.