

Title QTL analysis for sugars and organic acids in strawberry fruits
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Abstract

Improving fruit quality is an important goal for strawberry breeders. Quantitative trait loci (QTL) for fruit quality of cultivated strawberry (*Fragaria x ananassa* Duch.) have been identified. A segregating population of 213 individuals of a cross between 'Capitola' and 'CF1116', two genotypes with many contrasting fruit quality traits, was used in the study. Eleven traits related to sugar and acid content were evaluated for all progeny and for both parents. These traits were quantified by enzymatic and metabolic profiling using one-dimensional ¹H-NMR. Depending on the trait, measurements were taken over two or three years. Progeny showed a large range of variation for most of the traits. The strongest positive correlations were observed between fructose and glucose contents, and citrate and sum of organic acids. A total of 30 significant QTLs were detected by composite interval mapping (LOD superior to LOD_{threshold}=2.88) and spread over eight female linkage groups and seven male linkage groups in coupling phase with a percentage of variation explained by a QTL ranging from 5.7 to 14.1 %. Strong co-locations of putative QTLs for fructose and glucose were detected, while other QTLs were detected for sucrose.