Title Candidate genes and QTLs for fruit ripening and softening in melon

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Abstract

Different factors affect the quality of melon fruit and among them long shelf life is critical from the consumer's point of view. In melon, cultivars showing both climacteric and non-climacteric ripening types are found. In this study we have investigated climacteric ripening and fruit softening using a collection of near-isogenic lines (NILs) derived from the non-climacteric melon parental lines PI 161375 (SC) and "Piel de Sapo" (PS). Surprisingly, we found that QTL *eth3.5* in NIL SC3-5b induced a climacteric-ripening phenotype with increased respiration and ethylene levels. Data suggest that the non-climacteric phenotypes from PI 161375 and "Piel de Sapo" may be the result of mutations in different genes. Several QTLs for fruit flesh firmness were also detected. Candidate genes putatively involved in ethylene regulation, biosynthesis and perception and cell wall degradation were mapped and some colocations with QTLs were observed. These results may provide additional data towards understanding of non-climacteric ripening in melon.