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Expression of ACC oxidase antisense gene inhibits ripening of cantaloupe melon fruits

Ricardo Ayub[1], Monique Guis[1], Mohamed Ben Amor[1], Laurent Gillot[1], Jean-Paul Roustan[1], Alain Latché[1], Mondher Bouzayen[1] & Jean-Claude Pech[1, *]

[1]Ecole Nationale Supérieure Agronomique de Toulouse, UA INRA, 145 Avenue de Muret, 31076 Toulouse Cedex, France.

[*]email: pech@flora.ensat.fr

The plant hormone ethylene plays a major role in the ripening of climacteric fruit. We have generated transgenic cantaloupe Charentais melons expressing an antisense ACC oxidase gene; ACC oxidase catalyzes the last step of ethylene biosynthesis. Ethylene production of transgenic fruit was <1 % of control untransformed fruit, and the ripening process was blocked both on and off the vine. The antisense phenotype could be reversed by exogenous ethylene treatment. Analysis of antisense ACC oxidase melons indicated that the ripening process includes ethylene-dependent and ethylene-independent pathways. Because the transgenic line we generated displays extended storage life and improved quality, it has a promising potential for commercial development.

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AGROBACTERIUM TUMEFACIENS-MEDIATED TRANSFORMATION OF YELLOW PASSION FRUIT (*PASSIFLORA EDULIS* F. *FLAVICARPA* WITH THE *CME-ACOL* GENE

Authors: M. Quoirin, L.M. Winkler, R. Ayub

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Abstract:
In order to improve fruit quality and shelf-life of the yellow passion fruit, experiments were carried out for the introduction of an antisense melon ACCoxidase gene (*CMe-ACO1*) into leaf explants via *Agrobacterium tumefaciens*, followed by plantlet regeneration. For regeneration experiments, three concentrations of benzyladenine (BA), 4.44, 6.66 and 8.87 µM, were supplemented into MS medium. Leaf explants were excised from seedlings and grafted plants and two positions of explants were compared: abaxial or adaxial face in contact with the culture medium. Best results were obtained on a medium containing 6.66 µM BA for both kinds of explants and for both explant positions. For seedling material, this treatment resulted in more than 60 % of explants with regenerating shoots for both positions. Around 40 to 60 % of explants coming from grafted plants regenerated on the same medium, depending on the genotype. Shoots were rooted on half-strength MS medium containing 2.89 µM gibberellic acid. For transformation experiments, leaf explants were cocultured with *A. tumefaciens* strain EHA 101 carrying the binary vector pGA643, which includes an antisense *CMe-ACO1* and a *nos/nptII* gene constructs. Transformation with EHA101 carrying pBIN19 allowed the regeneration of control transgenic plants, transformed with the *nptII* gene only. As indicated by PCR analysis, three plants among nine grown in the presence of kanamycin were found putatively transformed with *nptII* gene, and one plant among six grown under the same conditions were found putatively transformed with *CMe-ACO1* gene.