

**Title** Gene expression and ethylene production in transgenic pear (*Pyrus communis* cv. 'La France') with sense or antisense cDNA encoding ACC oxidase

**Author** Mei Gao, Narumi Matsuta, Hideki Murayama, Tomonobu Toyomasu, Wataru Mitsuhashi, Abhaya M. Dandekar, Ryutaro Tao and Koichi Nishimura

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### Abstract

An *Agrobacterium*-mediated transformation system was developed for pear (*Pyrus communis* L., cv. 'La France') with leaf discs used as explants. This system was successfully used to introduce the sense and antisense cDNA that encode an ACC oxidase (ACO) cloned from the ripe pear fruit into the pear genome. The transcriptional activity of the transgene and endogenous gene in the transgenic shoots were detected by the strand-specific probes used in RNA blot analysis. The gene co-suppression was found in almost all antisense lines and one sense line, while the over-expression was observed in other sense lines. The ethylene production in transgenic shoots was consistent with the expression of sense-strand *ACO* transcription when the samples were incubated in 1 mM ACC, which is a unique substrate of ACO. Ethylene production in *in vitro* shoots was reduced by 85% in an antisense line. *In vitro* flowering and abnormal rooting was found in some antisense shoots. The relationships between the ethylene and above phenomena were also discussed.