Title ACC-oxidase is the rate limiting step in ethylene biosynthesis during postharvest storage of tomato

Author B. Van de Poel, I. Bulens, M.L.A.T.M. Hertog, B.M. Nicolaï , A.H. Geeraerd, Y. Oppermann , M. Sauter and M.P. De Proft

Citation ISHS ActaHorticulturae 945:429-434. 2012.

Keyword tomato; *Solanum lycopersicum*; ethylene; ripening; postharvest storage; rate limiting step; ACC oxidase

Abstract

It has been well documented in literature that ACC-synthase is the rate limiting step in ethylene biosynthesis during climacteric ripening of tomato. This manuscript investigates how the ethylene metabolism further evolves during post harvest storage of tomato. The current data show how ethylene production declines after tomato fruit reaches the red stage. Metabolite screening revealed that ACC and MACC are highly abundant in red ripe and stored fruits. Surprisingly, although ACC-oxidase in-vitro activity was declining, ACC-synthase in vitro activity was increasing again during postharvest storage. These data suggest that the decline in ethylene production during storage must be regulated at the level of ACC-oxidase. The exact reason why ACC-synthase is still highly active during these stages remains peculiar and needs further investigation.