

Abstract:

Two cDNAs encoding xyloglucan endotransglycosylase (XET) homolog were isolated from ripening pear (*Pyrus communis* 'La France') fruit and termed PC-XET1 and PC-XET2. PC-XET1 showed only 45% identity in deduced amino acids with PC-XET2. The accumulation of PC-XET1 mRNA in fruit was detected in preclimacteric stage at a low but distinct level and significantly increased with ripening. It was enhanced by propylene treatment, an analog of ethylene, when it was treated at preclimacteric stage. The increased accumulation of PC-XET1 mRNA with ripening was suppressed to the level of preclimacteric stage by 1-methylcyclopropene (1-MCP), an inhibitor of ethylene action after onset of ripening. The ethylene-regulated expression of this gene and its correlation with the fruit softening process suggest that PC-XET1 might be involved in cell wall degradation during ripening. The expression of PC-XET2 was also stimulated after onset of ripening and by propylene treatment although 1-MCP treatment did not suppress the accumulation. Therefore the accumulation of PC-XET2 might be regulated by developmental factors rather than ethylene. The accumulation of two XET mRNAs was also detected in other tissues such as flowers and expanding leaves and shoots. These results suggest that these two XET genes are regulated differentially and also play divergent roles in modification of cell wall structure during growth and development of vegetative and reproductive tissues in pear.