

Abstract

Flesh softening during ripening differs greatly among apple cultivars. ‘Fuji’, the world's most popular cultivar, shows no detectable loss of firmness even in storage at room temperature for a month, whereas ‘Golden Delicious’ starts softening soon after harvest. To elucidate how softening patterns differ among cultivars, we analyzed four ripening-related genes (*MdACS1*, *MdACO1*, *MdPG1* and *MdExp3*) in 14 cultivars, which display the firmness loss pattern of either ‘Fuji’ or ‘Golden Delicious’. All cultivars that remain firm revealed very weak or transient expression of *MdPG1*, irrespective of ethylene production rate and transcription levels of other genes. These results suggest that softening behavior during ripening may depend on the expression pattern of *MdPG1*.