Abstract

An important component of fruit ripening is the substantial decrease in tissue firmness that occurs. In terms of optimal "eating quality" different cultures prefer fruits of differing degrees of firmness. However, softer fruit are much more likely to be damaged during storage or transport and be infected by pathogens. Therefore, optimization of the postharvest management of fruits requires optimized management of fruit ripening and softening. Ripening-associated fruit softening is generally explained in terms of the action of fruit cell well-degrading enzymes. Biotechnological efforts to control ripening ,in general, and fruit softening in particular have focused of suppressing the expression of genes encoding cell wall-metabolizing enzymes. Tomato is a well-studied "model" fruit and has been the subject of many genetic engineering efforts . These efforts have led to only modest success. This talk will briefly examine efforts that have been made to modify the softening of tomatoes and other fruits additional, possibly more effective "genetic adjustments" of fruit wall-digesting enzymes. It will then discuss the possibility that additional, potentially crucial fruit cell wall-modifying enzymes have not yet been described. The idea that fruit cell wall pectin polymer can influence the overall progress of ripening, not just fruit softening, because of the production of "oligosaccharide signals" will also be discussed. Finally, the idea that genetic engineering might also lead to potentially useful modifications of the synthesis of cell wall polysacchrides and, thus, contribute to improved firmness management and postharvest handling possibilities will be discussed.