

Title MaExp1, an ethylene-induced expansin from ripening banana fruit
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Abstract

Expansins are known to participate in several processes during plant growth and development particularly where wall extension and cell expansion are required. These are also believed to prepare cell wall for their subsequent degradation by cell wall hydrolases during ripening particularly in climacteric fruits. The identification and characterization of a fruit-specific expansin, *MaExp1*, gene is reported here for the first time from banana. The *MaExp1* cDNA of 1098 bp encodes a polypeptide of 255 amino acids, which has all the characteristics of an α -expansin. Ethylene exposure to unripe mature banana fruit induces *MaExp1* expression, which increases with the progression in ripening and 1-MCP (1-methyl cyclopropene) treatment prior to ethylene exposure inhibits expression. No expression has been detected in any other tissue. The genomic sequence analysis has revealed that *MaExp1* contains two short introns of 83 and 79 nucleotides. The 888 bp proximal promoter of the gene shows presence of a putative ethylene and auxin responsive elements and a direct repeat within the sequence. The IAA treatment enhanced *MaExp1* expression only in the presence of ethylene suggesting its effect as synergistic and additive. It is suggested that *MaExp1* could be used for manipulating ripening in banana and its promoter could be a suitable candidate for expressing foreign gene (vaccines) in transgenic banana fruit.