The identification and characterization of a novel transcription factor LeCBP, a potential regulator of the tomato stylar Chi2;1 promoter

Abstract

A gene, LeCBP encoding a protein containing a PHD zinc finger motif and a bipartite nuclear localization signal, was identified from tomato pistils by its binding ability to a specific DNA motif using a yeast one-hybrid system. The LeCBP has the ability to bind specifically to a 20 bp region of the promoter of Chi2;1, encoding a pistil chitinase. LeCBP also has the ability to activate the yeast URA3 reporter gene in yeast. An analysis of the temporal and spatial patterns of gene expression through northern blotting and in situ hybridization has demonstrated the highest levels of expression in mature tomato pistils where the mRNA was localized along the transmitting tracks of the style as well as on the ovules and ovary walls. The specific binding property of LeCBP with Chi2;1 promoter may be used to engineer high levels of expression in pistils of transgenic plants.