Title

Alpha-expansins: more than three decades of wall creep and loosening in fruits

Abstract

Expansins are proteins without catalytic activity, but able to break hydrogen bonds between cell wall polysaccharides hemicellulose and cellulose. This proteins were reported for the first time in 1992, describing cell wall extension in cucumber hypocotyls caused particularly by alpha-expansins. Although these proteins have GH45 and CBM63 domains, characteristic of enzymes related with the cleavage of cell wall polysaccharides, demonstrating in vitro that they extend plant cell wall. Its participation has been associated to molecular processes such as development and growing, fruit ripening and softening, tolerance and resistance to biotic and abiotic stress and seed germination. Structural insights, facilitated by bioinformatics approaches, are highlighted, shedding light on the intricate interactions between alpha-expansins and cell wall polysaccharides. After more than thirty years of its discovery, we want to celebrate the knowledge of alpha-expansins and emphasize their importance to understand the phenomena of disassembly and loosening of the cell wall, specifically in the fruit ripening phenomena, with this state-of-the-art dedicated to them.

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