

Title Responses of phospholipase D and lipoxygenase to mechanical wounding in postharvest cucumber fruits

Author Yu-ying Zhao, Chun-lu Qian, Ji-cheng Chen, Yan Peng and Lin-chun Mao

Citation Journal of Zhejiang University - Science B, 11, Number 6, 443-450, 2010

Keywords Cucumber; Mechanical wounding; Phospholipase D; Lipoxygenase; Phospholipid

Abstract

This study was to investigate the responses of phospholipase D (PLD) and lipoxygenase (LOX) to mechanical wounding in postharvest cucumber (*Cucumis sativus* L. cv. Biyu-2) fruits. Membrane-associated Ca^{2+} content, activities and gene expression of PLD and LOX, and contents of phosphatidylcholine (PC), phosphatidylinositol (PI), and phosphatidic acid (PA) were determined in cucumber fruits following mechanical wounding. Results show that PLD and LOX activities increased with the PLD and LOX mRNAs which are upregulated upon wounding, while membrane-associated Ca^{2+} content decreased. Accompanying with the increase of PLD and LOX activities, accumulation of PA and losses of PC and PI were observed in all fruits, but there were differences of degrees between wounded and control fruits. Results suggest that PLD and LOX might be the main hydrolytic enzymes of phospholipids in postharvest cucumber fruits participating in the mechanical wounding injury. The activation of PLD and LOX might be the result of gene expression, which could be stimulated by the Ca^{2+} flowing from the membrane to the cytoplasm upon receiving the wounding signals.

<http://www.springerlink.com/content/k7013651j7115572/fulltext.pdf>