

Salicylic acid treatment suppresses *Phomopsis longanae* Chi-induced disease development of postharvest longan fruit by modulating membrane lipid metabolism

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Abstract

Salicylic acid (SA) is a crucial endogenous signaling molecule which can activate fruit defense responses to biotic or abiotic stress. The aim of this work was to study the effects of SA on disease occurrence, cell membrane integrity, membrane lipid-degrading enzymes activities, as well as amounts of cell membrane phospholipids and fatty acids in *Phomopsis longanae* Chi-inoculated longans during storage. The results indicated that, compared with the fruit with mere inoculation, SA treatment reduced fruit disease index and pericarp cell membrane permeability in *P. longanae*-inoculated longans. Additionally, SA treatment decreased activities of phospholipase D (PLD), phospholipase C (PLC), lipase, and lipoxygenase (LOX), lowered contents of saturated fatty acids (SFAs), phosphatidic acid (PA) and diacylglycerol (DAG), but suppressed the reductions of phosphatidylcholine (PC), phosphatidylinositol (PI), unsaturated fatty acids (USFAs), ratio of USFAs to SFAs (U/S), and index of unsaturated fatty acids (IUFA) in pericarp of *P. longanae*-inoculated longans. These data demonstrated that SA treatment could retain integrity of membrane structures, enhance fruit disease resistance to *P. longanae*, and thus suppress disease development in *P. longanae*-inoculated longans during storage. These results indicated that SA was an eco-friendly approach to inhibit disease development and extend storage-life of harvested longan fruit.