

Title Mechanisms modulating fungal attack in post-harvest pathogen interactions and their control

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Abstract

As biotrophs, insidious fungal infections by post-harvest pathogens remain quiescent during fruit growth, but at a particular phase, during ripening and senescence, the pathogens transform to necrotrophs and elicit the typical decay symptoms. Exposure of unripe hosts to pathogens initiates defensive signal-transduction cascades that limit fungal growth and development. Exposure to the same pathogens during ripening and storage activates a substantially different signalling cascade that facilitates fungal colonization. This review will focus on modulation of post-harvest host-pathogen interactions by pH and reactive oxygen species (ROS). Modulation of host pH in response to a host signal is bidirectional and includes either alkalisation by ammonification of the host tissue, or acidification by secretion of organic acids. These changes sensitise the host and activate the transcription and secretion of fungal hydrolases that promote maceration of the host tissue. This sensitisation is further enhanced at various stages by the accumulation of host or fungal ROS that can further weaken host tissue and amplify fungal development. Several specific examples of coordinated responses that conform with this scheme are described, followed by discussion of the means to exploit these mechanisms to establish new approaches to post-harvest disease control.

<http://www.springerlink.com/content/06861n27p0111671/fulltext.pdf>