

Publication

Several MAMPs, including chitin fragments, enhance AtPep-triggered oxidative burst independently of wounding

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AtPeps are a family of small peptides in Arabidopsis that are believed to act as endogenous amplifiers of the plant's innate immune response. In our recent study, (10) we showed that in Arabidopsis leaf disks, bacterial MAMPs (microbe-associated molecular patterns) such as the flagellin derived elicitor flg22, greatly enhanced the release of reactive oxygen species (ROS) triggered by a subsequent AtPep-perception. This enhanced ROS production could be a hallmark either of improved local defense or of the initiation of ROS-based systemic signaling. Here, we established a superior ROS detection system based on a new derivative of luminol (L-012). With this sensitive system we were able to show that chitin, too, acts as an enhancer of AtPep-triggered ROS, linking this specific defense response amplification also to the recognition of fungal pathogens. In addition we used the more sensitive ROS assay to transfer the experimental setup from cut leaf disks to unwounded seedlings. Thereby we revealed that wounding is not a prerequisite to enable the MAMP-induced enhancement of the AtPep-triggered ROS response.

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