

Moo Je Cho

Department of Biochemistry, Gyeongsang National University,
Chinju 660-701, Korea Biology

The resistance of plants to invading pathogens is accompanied by the deployment of complex array of defense responses. These include rapid cell death of challenged cells leading to the formation of local lesions (termed the hypersensitive response : HR) and non-specific immunity to subsequent infection by a variety of pathogens known as systemic acquired resistance (SAR).

Salicylic acid has been known as an important signalling molecule involved in both HR and SAR. Recent advances in our knowledge of plant defense signalling have revealed that plants employ a network of signal transduction pathways, some of which are independent of salicylic acid. Cross-talk between the salicylic acid-dependent and the salicylic acid-independent pathways provides great regulatory potential for activating multiple resistance mechanisms in varying combinations.

Recently we have demonstrated that specific plant calmodulin isoforms, specific Ca^{2+} -signal transducer, mediate plant defense signalling with salicylic acid-independent manner. Furthermore several enzyme related to production of defense signaling molecules including nitric oxide and reactive oxygen species, such as nitric oxide synthase, NAD^+ -kinase and calcineurin, are regulated reciprocally by calmodulin isoforms.