



Review

Jasmonates are phytohormones with multiple functions, including plant defense and reproduction

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ABSTRACT. The plant hormones jasmonic acid and methyl jasmonate, along with their intermediate compounds, produced in the octadecanoid pathway, are important signaling molecules that are collectively called jasmonates. These are widespread in the plant kingdom and play crucial roles in biotic/abiotic stress responses, as well as in processes related to plant growth and development. Recently, it has been shown that jasmonates are also involved in reproductive processes. We present the most recent findings related to the biosynthesis, regulation and signaling mechanisms of jasmonates. Additionally, we discuss the identification of [(+)-7-*iso*-JA-L-Ile] as the active biological hormonal form of jasmonate; this fills the greatest gap in our knowledge about the signaling mechanism that is responsible for the activation of downstream genes in the jasmonate-signaling cascade. The identification of several

Arabidopsis thaliana mutants was crucial to the elucidation of the signaling mechanisms involved in jasmonate-mediated responses. Finally, the involvement of jasmonates in the reproductive process of *Nicotiana tabacum* L. is briefly discussed, since some of the main enzymes of the jasmonic acid biosynthesis pathway were identified in a stigma/style expressed sequence tag database (TOBEST) of this Solanaceae species.

Key words: Jasmonic acid; Methyl jasmonate; Signaling; Reproductive process; Defense response; *Nicotiana tabacum* L.