

Induction of Hydroxycinnamic Acid Amides and Tryptophan by Jasmonic Acid, Abscisic Acid and Osmotic Stress in Barley Leaves

Yuki Ogura, Atsushi Ishihara* and Hajime Iwamura

Division of Applied Life Sciences, Graduate School of Agriculture, Kyoto University, Kyoto 606-8502, Japan; and CREST, Japan Science and Technology Corporation (JST), Japan.

Fax: +81-75-753-6408. E-mail: aishiha@kais.kyoto-u.ac.jp

* Author for correspondence and reprint request

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Jasmonic Acid, Abscisic Acid, Hydroxycinnamic Acid Amide

The effects of jasmonic acid (JA) and abscisic acid (ABA) on secondary metabolism in barley (*Hordeum vulgare* L.) were investigated. Treatment with JA at 100 μM for 48 h induced accumulation of four compounds in barley primary leaves. The accumulation of these compounds was also observed after treatment with ABA at 100 μM . The induced compounds were identified as *p*-coumaroylputrescine, *p*-coumaroylagmatine, *p*-coumaroyl-3-hydroxyagmatine and tryptophan by spectroscopic methods. The profiles of compounds induced by application of JA and ABA were different. JA exhibited stronger inducing activity for hydroxycinnamic acid amides than ABA, while ABA was more active in tryptophan accumulation. The major hydroxycinnamic acid amides in JA- and ABA-treated leaves were *p*-coumaroylagmatine and *p*-coumaroyl-3-hydroxyagmatine, respectively. These differences suggested that JA and ABA act in distinct modes. The induction of these compounds was also observed in leaf segments treated with 1 M sorbitol and glucose. These findings suggested that JA and ABA are involved in accumulation of hydroxycinnamic acid amides and tryptophan in response to osmotic stress in barley.