

Activation of Isoflavone Biosynthesis in Excised Cotyledons of *Lupinus* Seedlings by Jasmonoids and Excess Light

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Z. Naturforsch. **56c**, 1038-1046 (2001); received May 7/August 1, 2001

Isoflavone Accumulation, Jasmonoids, *Lupinus* spp. (Leguminosae)

Exogenous jasmonic acid (JA) and methyl jasmonate (MJ) induced accumulation of isoflavone constituents in cotyledons prepared from imbibed seeds of white lupin (*Lupinus albus* L.). Exogenous 0.2 mM MJ enhanced the levels of 7-*O*-(6"-*O*-malonyl)glucosylgenistein and 7-*O*-glucosylgenistein in the cotyledons of etiolated seedlings that had been incubated in the dark for 48 h. Regarding isoflavone induced by excision and slicing in the cotyledons as background level, the effect of light was 2- to 3-fold higher than that of 0.2 mM MJ. Cotyledons exposed to MJ along with a 24-h light period displayed a higher level of isoflavone accumulation than that of light alone. Total molar amounts of isoflavone accumulated in the cotyledons treated with MJ under continuous light were approximately the sum of those induced by MJ alone and light alone, respectively. The additive-like effect of MJ and light on isoflavone accumulation in lupin tissues suggested the presence of two different signaling systems independently responsible for those two stimuli. Excised cotyledons from etiolated yellow lupin (*L. luteus* L. cv. Topaz) seedlings also supported this hypothesis. The cotyledons could accumulate both an isoflavone and a flavone, and MJ selectively increased some of the isoflavone constituents, whereas light enhanced the levels of both. The selective accumulation mechanism of isoflavonoids in cotyledons, in which jasmonoids are involved, clearly differed from that activated by light.