

白木香茎中内源茉莉酸类和倍半萜类物质对机械伤害的响应

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Response of Endogenous Jasmonates and Sesquiterpenes to Mechanical Wound in *Aquilaria sinensis* Stem

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摘要 为揭示伤害信号——茉莉酸类 (JAs) 对倍半萜可能的调控作用, 以3年生白木香 [*Aquilaria sinensis* (Lour.) Gilg] 树苗为试材进行机械伤害和外施茉莉酸甲酯 (MeJA) 处理, 测定其茎中内源JAs和倍半萜含量。结果表明, 机械伤害处理1 h后, 内源JAs含量显著增加, 随后迅速下降; 伤害处理24 h后又有小幅升高。伤害处理诱导白木香产生3种倍半萜 (δ -愈创木烯、 α -愈创木烯和 α -葎草烯) 且含量随着伤害时间延长而增多。外源MeJA处理也能够诱导产生相同种类的倍半萜且诱导强度大于伤害处理。伤害早期 (1 h) 内源JAs含量升高和伤害后期 (48 h) 倍半萜含量增多是植物启动相应的防御反应和抵御伤害胁迫的重要机制。

关键词: 白木香 茉莉酸类 倍半萜 机械伤害

Abstract: To confirm the function of jasmonates (Jas) in induction of sesquiterpenes, three-year-old *Aquilaria sinensis* (Lour.) Gilg saplings were used as materials in treatments of mechanical injury and exogenous MeJA. The contents of endogenous JAs and sesquiterpenes were detected by GC-MS, separately. The results showed that after 1 h wound treatment endogenous JAs content increased significantly, then decreased rapidly; after 24 h the contents of JAs have a slight elevation. Endogenous JAs content increased rapidly and reached a maximum at 1h, and then decreased rapidly. A second slight increase in JAs level was observed at 24 h after wound treatment. Wound induced the production of three sesquiterpenes (δ -guaiene, α -guaiene and α -humulene), and the contents increased with the time prolonged. Similarly, exogenous MeJA application also induced the production of three same sesquiterpenes, while the inducement intensity of MeJA was better than wound. It is thus suggested that JAs burst in the early-stage and sesquiterpenes biosynthesis in late-stage response to wound may constitute an important mechanism by which plant starts the related defense reaction and adapts to wound stress.

Keywords: *Aquilaria sinensis*, jasmonates, sesquiterpenes, mechanical wound

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