

论文

拟南芥和甜菜夜蛾相互作用的差异蛋白分析

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摘要:

以甜菜夜蛾(*Spodoptera exigua*)和模式植物拟南芥(*Arabidopsis thaliana*)作为研究体系,应用蛋白质双向凝胶电泳(Two-dimensional gel electrophoresis, 2-DE)分析了在甜菜夜蛾取食诱导条件下拟南芥蛋白表达的差异,从蛋白质水平揭示昆虫取食诱导条件下植物的化学防御机制. 结果发现,在昆虫取食诱导条件下,有28个蛋白发生显著变化,其中17个蛋白上调表达,11个蛋白下调表达. 利用基质辅助激光解吸电离飞行时间质谱(MALDI-TOF MS)对差异蛋白进行了鉴定,结果发现转酮酶、S-腺苷甲硫氨酸合成酶、二氢硫辛酰胺脱氢酶和脂肪酸合成酶在植物诱导化学防御中具有重要的作用,其中脂肪酸合成酶与茉莉酸代谢通路相关.

关键词: 甜菜夜蛾; 拟南芥; 双向电泳; 基质辅助激光解吸电离飞行时间质谱; 诱导防御

Analysis of Differential Protein Expression Patterns on Interaction Between *Arabidopsis thaliana* and *Spodoptera exigua*

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Abstract:

A differential analysis of expression proteins on the interaction between *Spodoptera exigua*(genera-list) and *Arabidopsis thaliana* was studied via 2-DE combined with high-throughput MS. On the basis of the abundance of expression proteins in the model plant *Arabidopsis* fed by the insect, the intensities of 28 spots in more than 1100 protein spots detected on each 2D gel were significantly changed. Among them, 17 protein spots were up-regulated, and 11 were down-regulated under the insect feeding for 8 h. In addition, six responsive proteins of them were confirmed by MALDI-TOF MS analysis and in turn, the homogeneous comparison of protein sequences. These proteins were generally found in organism metabolism, such as transketolase, S-adenosylmethionine synthase, dihydrolipoamide dehydrogenase 2, β -ureidopropionase, and fatty-acid synthase, etc. Although the proteome for the interaction between the insect and *Arabidopsis* is complex enough, the important thing for us is how to elucidate the inducible defense mechanism of plants. Therefore, the above data may provide a new insight to the biotic stress response.

Keywords: *Spodoptera exigua*; *Arabidopsis thaliana*; Two-dimensional electrophoresis; MALDI-TOF MS; Induced-defense

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