

单、双子叶植物的代谢物调节农杆菌Vir区基因表达的研究¹⁾

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摘要 本文研究了六种植物(三种单子叶植物、三种双子叶植物)愈伤组织的渗出物和抽提物对农杆菌Vir基因表达的调节作用。其调节水平随植物的不同而明显不同,但单、双子叶植物的代谢物对Vir基因表达的调节作用并非截然分开。即使在双子叶植物(如大豆)的抽提物与渗出物中也存在着抑制Vir基因表达的因子,而在单子叶植物(如玉米等)的抽提物与渗出物中也存在着促进Vir基因表达的调节因子。Vir位点的调节反应随渗出物与抽提物的种类不同而明显不同,不同Vir位点对同类渗出物或抽提物的反应也不同。渗出物对Vir基因表达的正调节效应优于抽提物。植物渗出物与AS对Vir区基因表达的调节并不表现简单的累加效应或协同作用。相反,在渗出物中还存在着不同的程度阻抑AS对Vir基因表达正调节的因子。

关键词 [基因表达调节](#), [Vir区基因](#), [代谢物](#), [单子叶植物](#), [双子叶植物](#)

分类号

Regulation of Agrobacterium Vir Gene Expression by Metabolites from Monocotyledonous and Dicotyledonous Plants

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Abstract

The metabolites from three monocotyledonous and three dicotyledonous plants were respectively utilized to regulate the expression of virulence (Vir) genes in *Agrobacterium tumefaciens*. Regarding the regulation of Vir gene expression by metabolites, the levels varied with the kind of plants, and the regulatory responses of various Vir loci to extracts or exudates varied with not only different sources but even the same one. Nevertheless, it seems that there was no very distinct border between monocotyledonous and dicotyledonous crops used in this work. For example, the extracts and exudates from soybean showed a strong inhibition to the expression of Vir genes and growth of *Agrobacterium*, while there did exist metabolic factors in extracts and/or exudates from maize and wheat which promoted the expression of Vir genes. As a whole, the exudates were more neficial for Vir expression than extracts in some extent. The combination of the plant exudates with acetosyringone did not exhibit a synergistic action on Vir gene expression. On the contrary, highly efficient induction of Vir gene expression by acetosyringone was still inhibited to a certain degree in the presence of plant exudates, especially those from soybean cultures. Thus, it is hypothesized from our results that the obstacle of *Agrobacterium*^{a2} mediated transformation of monocotyledonous plant might be a step subsequent to the regulation of Vir genes during the T^{a2} DNA transfer process, besides the possibility that production of Vir signal molecules by monocotyledonous cells is not effective enough to elicit the full activation and expression of *Agrobacterium* Vir genes.

Key words [Gene expression](#) [Virulence genes](#) [metabolites](#) [monocotyledonous plants](#) [Dicotyledonous plants](#)

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