

生物技术—研究进展

木质素生物合成途径中关键酶基因的分子特征

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摘要:

本文主要对苯丙氨酸裂解酶(phenylalanine ammonia-lyase, PAL)基因、4-香豆酸辅酶A连接酶(4-coumarate-CoA ligase, 4CL)基因、肉桂醇脱氢酶(cinnamyl alcohol dehydrogenase, CAD)基因、过氧化物酶(oxidase, POX)基因、漆酶(laccase, LAC)基因、dirigent(DIR)蛋白基因等木质素生物合成途径中关键酶基因的克隆、表达、调控等研究进展进行综述,旨在揭示上述木质素生物合成途径中关键酶基因的分子特征,为通过转基因技术来调控植物体中木质素的含量及其化学组成从而得到改良的新植物资源提供思路。

关键词: 基因调控

Molecular Characterization of Key Enzyme Genes Related to the Pathway of Lignin Biosynthesis

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Abstract:

This review focused on the cloning, expression and regulation of key enzyme genes, such as phenylalanine ammonia-lyase genes (PALs), 4-coumarate-CoA ligase genes (4CLs), cinnamyl alcohol dehydrogenase genes (CADs), peroxidase genes (POXs), laccase genes (LACs), and dirigent genes (DIRs), which were related to the pathway of lignin biosynthesis. It would provide some ideas for regulating content and chemical composition of plant lignin and obtaining improved new plant resource by genetic manipulation at the key metabolic steps through disclosing the molecular characterization of the above key enzyme genes related to the pathway of lignin biosynthesis.

Keywords: genetic regulation

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