
题 目： 1-MCP 对番茄果实 *SICTR1* 基因
甲基化水平的影响

摘要

植物的生长发育是一个复杂的过程，在这个过程中很多生理活动都受到基因调控，但受到一定条件影响，植物的生理机能也将做出应答。乙烯能够促进果实衰老成熟，而 *SICTR1* 基因是乙烯信号传导中的一个应答基因，对于果实成熟衰老有着重要调控作用，此外，DNA 甲基化能引起染色质结构、DNA 构象、DNA 稳定性及 DNA 与蛋白质相互作用方式的改变，从而调控基因表达。

本实验通过从 1-MCP 处理过的番茄中提取总 RNA，反转录为 cDNA，然后经 q-PCR 扩增分析 *SICTR1* 基因表达量的变化。提取组织 DNA，DNA 修饰，PCR 扩增，探究 1-MCP 对番茄 *SICTR1* 基因甲基化水平的影响。以及测量相关衰老成熟指标的变化。为今后 DNA 甲基化在调控番茄果实成熟衰老提供相关理论基础。

关键词：1-MCP；番茄； *SICTR1* 基因；DNA 甲基化

Abstract

The growth and development of plants is a complex process, in which many physiological activities are regulated by genes, but when affected by certain conditions, the physiological activities of plants will also respond. Ethylene can promote fruit ripening and senescence, and *SICTR1* gene is a response gene in ethylene signal transduction, which plays an important role in regulating fruit ripening and senescence. In addition, DNA methylation can cause changes in chromatin structure, DNA conformation, DNA stability and the way DNA interacts with proteins to regulate gene expression.

In this study, total RNA was extracted from tomatoes treated with 1-MCP, transcribed into cDNA, and the expression of *SICTR1* gene was analyzed by q-PCR amplification. Tissue DNA was extracted, DNA modification and PCR amplification were performed to investigate the effect of 1-MCP on the methylation level of *SICTR1* gene in tomato. And to measure changes in related ripening and senescence indicators. It provides a theoretical basis for the regulation of DNA methylation in tomato fruit ripening and senescence.

Key words: 1-MCP; Tomato; *SICTR1* gene; DNA methylation

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