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光质对离体诱导棕色棉纤维基因表达影响的cDNA-SRAP分析

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Differential Expression Analysis of the Effect of Light Quality on Tissue Culture of Brown Cotton Fiber by cDNA-SRAP

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摘要

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摘要 以离体培养棕色棉纤维(暗培养10 d)为材料,分别用红、黄、蓝、白光进行处理,在24 h光照条件下培养10 d后,利用cDNA-SRAP技术对其基因表达进行分析。对其中16个差异片段测序后进行同源比对和功能分析表明:2个序列功能与植物抗逆性有关(CNGC5类似蛋白基因、(+)- δ -杜松烯合成酶);3个序列与生物代谢相关(β -1,3-葡聚糖酶13基因、质膜胆碱转运蛋白基因、tau类谷胱甘肽转移酶基因)。其中,谷胱甘肽转移酶基因与原花青素合成前体物质的转运有关,光质可能通过影响谷胱甘肽转移酶基因进而对原花青素的合成产生影响。

关键词: 离体培养 cDNA-SRAP 谷胱甘肽转移酶 植物抗逆性

Abstract: Fibers of brown cotton were treated with different light qualities (red, yellow, blue, and white) for 10 days in 24-h light conditions, after which their gene expressions were analyzed using the cDNA-SRAP technique. The biological functions of 16 differentially expressed genes were predicted and characterized. The results showed that two fragments had high sequence similarity with resistance genes (CNGC5-like protein gene, (+)-delta-cadinene synthase (cdn1-C6) pseudogene), 3 sequence related to biological metabolism (sugar transporter/spinster transmembrane protein (PtrOATP2)), beta-1,3-glucanase 13(B13G_13) mRNA, and tau class glutathione transferase GSTU43). Among them, the glutathione transferase was associated with the synthesis of proanthocyanidins. Light quality may affect glutathione transferase, thereby affecting the synthesis of proanthocyanidins.

Keywords: *In vitro* culture cDNA-SRAP glutathione transferase stress in plants

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