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研究报告

木质素降解条件下黄孢原毛平革菌lip基因转录调控序列的筛选与鉴定

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摘要 用DNA-蛋白质体外结合实验和凝胶迁移率变动分析技术筛选黄孢原毛平革菌（Phanerochaete chrysosporium）木质素过氧化物酶基因lipA、lipC、lipF的5′-端调控区内能与该菌在木质素降解条件下形成的蛋白特异结合的顺式作用元件。结果表明，来自lipC、lipF基因的5′-端片段LG2P3(396 bp)和 LG6S1-2（738 bp）能特异结合培养于Kirk低氮培养基中的菌丝体蛋白；而来自于lipF基因的5′-端的LG6S2 (226 bp) DNA片段能特异结合培养于天然冷杉木片中的菌丝体蛋白。对这些片段的DNA序列分析表明，它们均存在各种顺式作用元件，由此推测它们可能是被一些木质素过氧化物酶基因转录调控相关的蛋白质所结合的序列。

关键词 黄孢原毛平革菌；木质素过氧化物酶基因；凝胶迁移率变动分析；DNA结合蛋白；顺式作用元件

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Identification of Regulatory Sequence of lip Genes of Phanerochaete chrysosporium under Lignin-degradation

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Abstract

Eleven subcloned DNA fragments from the 5′- upstream region of lipA, lipC and lipF of Phanerochaete chrysosporium were assayed by using the gel mobility shift assay (GMSA). The total proteins extracted from P.chrysosporium mycelia grown in Kirk medium and natural fir wood chip were used to identify the segments in these 11 DNA fragments which are controlled by some regulatory proteins. The results showed that two DNA segments LG2P3(396bp) and LG6S1-2（738bp）in the 5′-noncoding regions of lipC and lipF were able to

specifically bind total mycelial proteins of P. chrysosporium incubated in Kirk medium, separately. One DNA segment LG6S2 (226bp) from the 5′-noncoding region of lipF was found to specifically bind total mycelial proteins of this fungus on natural fir wood chip. Analysis of the sequences showed that there were many cis-regulatory elements in these DNA segments, implying that these sequences may be bound by some transcriptional regulation protein factors.

Key words Phanerochaete chrysosporium lignin peroxidase gene Gel Mobility Shift Assay DNA-bound protein Cis-regulatory element

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