Functional analysis of the promoter region of *plg1*, a pectin-lyase encoding gene from *Penicillium griseoroseum*

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Two genes that code for pectin-lyase were cloned from *Penicillium griseoroseum*, a fungus with a remarkable capacity to secrete enzymes with industrial applications. *plg*1 and *plg*2 are under catabolic repression but *plg*1 is activated upon cultivation of the fungus in media containing pectin or sucrose and yeast extract. The aim of this work was to demonstrate the functionality of putative *cis*-elements using constructs containing *plg*1 promoter sequences and the green fluorescent protein (GFP) reporter gene. The expression of the *gfp* gene was then evaluated on fungus mycelia grown under inductive (pectin and sucrose/yeast extract) and repressive (glucose and pectin/glucose) conditions. A 319 bp fragment was crucial for expression in pectin. This fragment together with a 280 bp upstream sequence was necessary for gene expression in sucrose/yeast extract. The expression of *gfp* was detected under repressive conditions when two CreA binding motifs were deleted. A consensus sequence for the binding of the ACE1 protein, the repressor of the cellulolytic and xylanolytic systems of *Trichoderma reesei*, was also identified in this study. The analysis of the *plg*1 promoter may be used to improve pectin-lyase production aiming an industrial application or as an expression system for the production of heterologous proteins in *P. griseoroseum*.