The light-dependent regulator velvet A of *Aspergillus nidulans* acts as a repressor of the penicillin biosynthesis.

Spröte P, Brakhage AA (2007) The light-dependent regulator velvet A of *Aspergillus nidulans* acts as a repressor of the penicillin biosynthesis. *Arch Microbiol* 188(1), 69-79.

Abstract

The biosynthesis of the beta-lactam antibiotic penicillin in Aspergillus nidulans is catalysed by three enzymes that are encoded by the genes acvA, ipnA and aatA. Several studies have indicated that these genes are controlled by a complex regulatory network, including a variety of cis-acting DNA elements and regulatory factors. Until now, however, relatively little information is available on external signals and their transmission influencing the expression of the structural genes. Here, we show that the light-dependent regulator velvet A (VeA) acts as a repressor on the penicillin biosynthesis, mainly via repression of the acvA gene. Expression of a regulatable alcAp-veA gene fusion in an A. nidulans strain carrying, in addition, acvAp-uidA and ipnAp-lacZ gene fusions indicated that under alcAp-inducing conditions, penicillin titres and expression of acvAp-uidA were drastically reduced compared with untransformed wild-type strains. The same level of repression was found irrespective of whether the alcAp-veA gene fusion was expressed in a veA1 or DeltaveA background, with or without light. The expression of the ipnAp-lacZ gene fusion was only moderately affected indicating a less prominent effect. These findings were confirmed by the analysis of a regulatable niiAp-veA gene fusion. Under niiAp-inducing conditions, penicillin titres

and acvAp-uidA expression were much lower than in untransformed wild-type strains.

Beteiligte Forschungseinheiten

Molekulare und Angewandte Mikrobiologie Axel Brakhage Mehr erfahren

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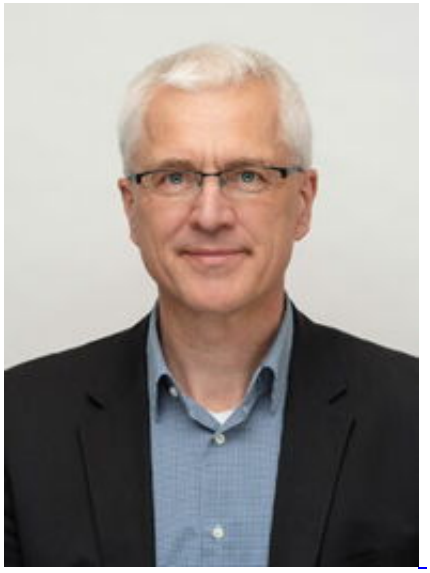

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