

# V<sup>th</sup> International Symposium on Postharvest Pathology



## Book of abstracts

From Consumer to Laboratory:  
Sustainable Approaches to Managing  
Postharvest Pathogens

19 – 24 May, 2019  
Liège, Belgium

[www.postharvest2019.be](http://www.postharvest2019.be)



**P015 New insights into griseofulvin biosynthesis by *Penicillium griseofulvum*, an agent of blue mould on apples**

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Abstract body text:

*Penicillium griseofulvum* is a plant pathogen, and one of the causal agents of apple blue mould, the most important postharvest diseases of apples. This species, as with other *Penicillium* spp., can produce an impressive array of secondary metabolites, including mycotoxins. Griseofulvin is one of the most characteristic compounds produced by *P. griseofulvum*, and is an antifungal metabolite classified as a potential carcinogen for humans by the International Agency on Research on Cancer (IARC). The genome of *P. griseofulvum* was previously sequenced and the griseofulvin biosynthetic genes were identified and partially characterized, but the role of the putative transcription factors, *gsfR1* and *gsfR2*, remain unknown. By producing deletion mutants, the role of *gsfR1* and *gsfR2* was investigated. Results indicate that the *gsfR2* gene is not involved in griseofulvin biosynthesis, while *gsfR1* encodes for a negative regulator. In the promoter sequence of *gsfR1*, binding sites for a number of different regulators, including *AreA*, *CreA*, *StuA*, and *FacB*, were observed. This suggests that griseofulvin production is regulated mainly by the level of nutrients, with greater production induced by the availability of easily assimilated carbon sources, such as glucose. Griseofulvin production in the two deletion mutants was verified *in vitro* and *in vivo* and compared with the wild-type strain and knockout mutants for the polyketide synthase gene. A higher level of griseofulvin and a higher virulence on apples were observed in the mutants. The current findings provide a better comprehension of griseofulvin biosynthesis and the role of this compound in the growth of *P. griseofulvum*.

Keywords: *Penicillium griseofulvum*, blue mould, griseofulvin, gene cluster, transcription factor, apple