



HAL
open science

Genetic and biochemistry analyses of the natural resistance of the fungicide fenhexamid in the phytopathogenic fungus *Botrytis pseudocinerea*

Alexis A. Billard, Saad Azeddine, Jocelyne J. Bach, Colette C. Audeon, Catherine C. Lanen, Sabine Fillinger, Danièle D. Debieu

► To cite this version:

Alexis A. Billard, Saad Azeddine, Jocelyne J. Bach, Colette C. Audeon, Catherine C. Lanen, et al.. Genetic and biochemistry analyses of the natural resistance of the fungicide fenhexamid in the phytopathogenic fungus *Botrytis pseudocinerea*. ECFG13. European conference on fungal genetics, Apr 2016, PARIS LA VILLETTE, France. p.581, 2016. hal-02797065

HAL Id: hal-02797065

<https://hal.inrae.fr/hal-02797065>

Submitted on 5 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

POSTER SESSION ABSTRACTS
Session CS8 Adaptation to xenobiotics
CS8W8

Wednesday 6th April
14:00 - 16:00

BILLARD Alexis (1), AZEDDINE Saad (1), BACH Jocelyne (1), AUDEON Colette (1), LANEN Catherine (1), FILLINGER Sabine (1), DEBIEU Danièle (1)
(1) BIOGER, INRA, AgroParisTech, Thiverval-Grignon, France

Genetic and biochemistry analyses of the natural resistance of the fungicide fenhexamid in the phytopathogenic fungus *Botrytis pseudocinerea*

The *Botrytis* species complex responsible for grey mould disease on grapevine is composed of two species: *Botrytis cinerea* the major one (about 90%) and *Botrytis pseudocinerea*. Despite their genetic polymorphism, these species cannot be morphologically distinguished. However, they do differ in their response to several fungicides, especially to the sterol biosynthesis inhibitor fenhexamid. While *B. cinerea* is sensitive to this hydroxyanilide, *B. pseudocinerea* is naturally resistant. Enzyme assays showed that in *B. pseudocinerea* the fenhexamid target enzyme, the sterol 3-ketoreductase was less sensitive to fenhexamid. In addition, a synergic effect between fenhexamid and sterol 14A-demethylation inhibitors (DMIs) known to inhibit Cyp51, a cytochrome P450 monooxygenase was observed in *B. pseudocinerea*. These results could suggest detoxification of fenhexamid by cytochromes P450. The *cyp684* gene showing the strongest similarity to *cyp51* among all *B. cinerea* cytochrome P450 genes was found strongly overexpressed in the presence of fenhexamid in *B. pseudocinerea*. In this work, we studied separately the effect of *B. pseudocinerea* *erg27* polymorphism, *erg27* encoding 3-ketoreductase, and of the recently identified cytochrome P450 gene, *cyp684*, on resistance to fenhexamid. The objective is to determine their respective implication in resistance. Experiments were conducted by exchange between *erg27B.cinerea* and *erg27B.pseudocinerea* in *B. cinerea* and by *cyp684* deletion in *B. pseudocinerea*. In parallel, metabolism studies are conducted to identify metabolites and test their activity on *Botrytis* spp.
