

Technical University of Denmark



Suppression of *Aspergillus* by *Pseudomonas aeruginosa*

Jensen, Britt Guillaume; Jelsbak, Lars; Søndergaard, Ib; Frisvad, Jens Christian; Nielsen, Kristian Fog

Publication date:
2011

Document Version
Early version, also known as pre-print

[Link back to DTU Orbit](#)

Citation (APA):

Jensen, B. G., Jelsbak, L., Søndergaard, I., Frisvad, J. C., & Nielsen, K. F. (2011). Suppression of *Aspergillus* by *Pseudomonas aeruginosa*. Abstract from *Biofilms in Nosocomial Fungal Infections*, Paris, France, .

DTU Library

Technical Information Center of Denmark

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

Suppression of *Aspergillus* by *Pseudomonas aeruginosa*

B.G. Jensen, L. Jelsbak, I. Søndergaard, J.C. Frisvad, K.F. Nielsen

Department of Systems Biology, Technical University of Denmark, DK-2800 Kgs. Lyngby, Denmark.

Objectives:

Cystic fibrosis patients are commonly infected by *Pseudomonas aeruginosa*, but Aspergilli are also frequently isolated. Our aim was to examine the possible interaction between *P. aeruginosa* and different *Aspergillus*.

Methods:

A suspension of 10^6 fungal spores/ml was streaked onto WATM culture plates. After 24 hours incubation at 37 °C, a *P. aeruginosa* overnight culture diluted to 10^8 CFU/ml was streaked out perpendicular to the fungal streak. The plates were incubated at 37 °C for 5 days, examined and plugs were extracted for HPLC and LC-DAD-MS analysis.

Results:

P. aeruginosa PAO1 suppressed growth of *A. fumigatus*, *A. niger*, *A. flavus*, *A. oryzae*, *A. terreus* and *E. nidulans*. HPLC and LC-DAD-MS results showed an increase in phenazine-1-carboxylic acid and phenazine-1-carboxamide production by *P. aeruginosa* in the contact area of *Aspergillus*. Different quinolones were also identified, here among 2-heptyl-3-hydroxy-4-quinolone (PQS). An unidentified green pseudomonas compound was also observed. Interestingly the *P. aeruginosa* mutant *rpoN* was unable to suppress *A. fumigatus*, but suppressed *A. flavus*, *A. oryzae* and *A. niger*. However several other *P. aeruginosa* mutants suppressed *A. fumigatus* including *flif*, *pilA*, *lasR*, *PVDA*, *PQSC* and *rhlA* mutants indicating that phenazines may be involved in the suppressed growth of *A. fumigatus*. All *pseudomonas* mutants suppressed *A. oryzae*, *A. niger* and *A. flavus*.

Conclusions:

An increase in phenazine production by *P. aeruginosa* may contribute to the ability of *P. aeruginosa* to suppress different Aspergilli. Especially phenazines seem to play a role, while other factors such as motility, rhamnolipid and alginate production do not seem to be involved.