Validation of an in vitro model of *Stenotrophomonas maltophilia* and *Aspergillus fumigatus* biofilm.

**Introduction**

Biofilms are microbial communities in which cells attach to each other and/or on surfaces. They produce an extracellular matrix (ECM) composed of polymeric substances. *Aspergillus fumigatus* (Af) is a saprophytic filamentous fungi often found in cystic fibrosis patients (Zeng et al., 2014). These patients also carry 2 Gram negative bacteria, *Pseudomonas aeruginosa* (Pa) and *Stenotrophomonas maltophilia* (Sm) involved in morbidity and mortality in cystic fibrosis patients. Biofilms are communal structures of microorganisms which have been associated with a variety of persistent infections that may respond poorly to conventional antibiotic or antifungal chemotherapy. Biofilm with Af and Pa have been described but never between Af and Sm.

**Aim of the study**

To develop and to validate a biofilm associating *A. fumigatus* and *S. maltophilia*.

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**Methods**

**Sequential inoculation**

- RPMI + SVF (10%)
- 37°C

**Microscopic analysis**

- Fluorescence
- Scanning electron

**Results**

- Bacteria Af ECM
- Sm + Af
  - Shorter ramifications (yellow circle) of Af after contact with Sm compared to Pa
- Pa + Af
  - Af seems to be destructed by Pa
  - Less inhibition for Af + Sm than Pa + Af
- Pa + Af
  - Strong inhibition of Af

**Conclusion**

For the first time, a biofilm of Sm and Af embedded in ECM was observed by microscopy. Only Af seems to be negatively affected by this interaction (changing phenotype; reduced growth rate).

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