



Cystic Fibrosis Research News

Title:

Distribution of the species of *Achromobacter* in a French Cystic Fibrosis centre and Multilocus Sequence Typing analysis reveal the predominance of *A. xylosoxidans* and clonal relationships between some clinical and environmental isolates

Authors:

Lucie Amoureux, Julien Bador, Fatma Bounoua Zouak, Angélique Chapuis, Claire de Curraize and Catherine Neuwirth

Affiliations:

Department of Bacteriology, University Hospital of Dijon, BP 37013, 21070 DIJON

What was your research question?

In our French CF centre (taking care of approximately 120 patients), we wanted to determine the number of patients that are annually colonised by an emerging bacterium named *Achromobacter* in their respiratory tract. We aimed also to describe the different kinds of species recovered in our centre and compare our strains with the ones that are recovered from other CF patients from other countries or in environmental samples.

Why is this important?

Little is known yet about the ability to cause harm and sources of contamination for CF patients of the bacteria belonging to the group *Achromobacter*. Currently, there are at least 15 different species in this group. Some species and some particular strains might be more involved in infections than others. To answer to this question, it is first important to describe what kinds of strains are usually recovered from CF patients to focus on these strains in the next studies.

What did you do?

For 2007 to 2014 we collected all the strains recovered from the CF patients attending our centre. We identified the species of these strains by molecular (DNA) analysis of a gene called *nrdA*. Then using a method called Multilocus Sequence Typing (MLST), we were able to compare the types of strains identified in our centre with the ones already analysed worldwide. We also analysed 14 strains detected from environmental samples (wet sites like domestic or hospital sinks, showers, rivers) to know if they were the same as the ones recovered from the patients.

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cfresearchnews@gmail.com

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What did you find?

We found that each year *Achromobacter* was recovered from 12.7 % of the patients. For 6.7% the strain could be detected for at least 2 years in the lungs (chronic colonisation). Eleven different species were detected, *A. xylosoxidans* being the most prevalent species and recovered in more than 80 % of the cases of chronic colonisations. MLST analysis revealed a wide diversity among the strains within the centre. Interestingly, one third of the isolates had been previously described in other countries from other CF or non CF patients.

What does this mean and reasons for caution?

These results confirm the high prevalence of the species *A. xylosoxidans* among CF patients, like already described in several other studies. Reasons for this might be because the species is more adapted to CF patients lungs or more pathogenic. Moreover, this work revealed that some strains are distributed all around the world, among CF or non CF patients, and also in environmental samples, pointing out the potential role of wet sites as environmental sources of contamination.

What's next?

This study helped our understanding for which species of *Achromobacter* are the most common within patients in the centre. We are currently analysing isolates from 22 other CF centres in France to confirm these results.

Original manuscript citation in PubMed

<http://www.ncbi.nlm.nih.gov/pubmed/?term=Distribution+of+the+species+of+Achromobacter+in+a+French+Cystic+Fibrosis+centre+and+Multilocus+Sequence+Typing+analysis+reveal+the+predominance+of+A.+xylosoxidans+and+clonal+relationships+between+some+clinical+and+environmental+isolates>