

***Acinetobacter baumannii*: A Dangerous Pathogen Emerges**

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Acinetobacter baumannii is considered the most common oxidase-negative non-fermenting gram-negative rod encounter in the clinical laboratory [1]. This organism is widely distributed in nature and in the hospital environment and generally considered an opportunistic pathogen in debilitated patients. Recently, the Infectious Diseases Society of America included this microbe on a hit list of the six top priority dangerous drug-resistant microbes (see **Table 1**) due to the propensity of this organism to develop drug-resistance and to the lack of development of new drugs to treat infections caused by resistant *A. baumannii* [2]. Resistance of *A. baumannii* to carbapenems (Imipenem), which is the drug of choice to treat serious infections caused by this species, are fast becoming more common in the laboratory. The NPHL has lately observed multi-drug resistant *A. baumannii* from multiple laboratories within Nebraska.

This bacterium is one of 17 recognized species within the genus *Acinetobacter*. Many of the species within this genus are difficult to separate reliably by phenotypic methods alone and frequently are placed into groups or complexes based biochemical test results. It is therefore not uncommon to identify an isolate as *A. baumannii/calcoaceticus* complex or *A. baumannii/haemolyticus*. All of these species have the ability to oxidize glucose and are therefore described as the saccharolytic species of *Acinetobacter* in contrast to the asaccharolytic species which is most commonly *A. lwoffii*. **Table 2** identifies some simple phenotypic observations that can be used to separate these common species following automated system identification. *A. baumannii* is considered by far the most common species isolated from human specimens followed by *A. lwoffii* and *A. haemolyticus* [1].

To monitor for the emergence of resistance within *A. baumannii* in Nebraska, laboratories are being asked to submit to the NPHL any multi-drug resistant isolates of this species that are encountered. These isolates can be submitted through the current courier system that is now used for the submission of other clinical isolates for epidemiological evaluation. Any results following the evaluation of these isolates will be communicated with the laboratories in a future newsletter. Contact Peter Iwen at 559-7774 for further information concerning this issue.

References

1. Schreckenberger, P.C., et al. 2003. *Acinetobacter, Achromobacter, Chryseobacterium, Moraxella*, and other nonfermentative gram-negative rods, pg 749-779. In P.R. Murray et al. (ed.), *Manual of Clinical Microbiology*, Volume 1. 8th Edition, ASM Press, Washington, DC.
2. Talbot, G.H., et al. 2006. Bad bugs need drugs: an update on the development pipeline from the Antimicrobial Availability Task Force of the Infectious Diseases Society of America. *Clin Infect Dis*. 42: 657-668.

Table 1. IDSA “hit list” of dangerous “bugs”.

Methicillin-resistant <i>Staphylococcus aureus</i> <i>Escherichia coli</i> and <i>Klebsiella</i> spp. ^a <i>Acinetobacter baumannii</i> <i>Aspergillus</i> species ^b Vancomycin-resistant <i>Enterococcus faecium</i> <i>Pseudomonas aeruginosa</i>

^a Includes those isolates referred to as extended spectrum beta-lactamase producing gram-negative rods (ESBLs).

^b Mould associated with life-threatening infections in immunocompromised patients.

Table 2. Major species within the genus *Acinetobacter*.^a

<i>Acinetobacter</i> species	Growth at 44°C	Glucose Oxidizer	Hemolysis (SBA ^d)
<i>baumannii</i> ^{b,c}	Positive	Positive	Negative
<i>calcoaceticus</i>	Negative	Positive	Negative
<i>haemolyticus</i>	Negative	Positive	Positive
<i>lwoffii</i>	Negative	Negative	Negative

^a Major genus characteristics include the inability to ferment glucose (non-fermenter), lack of oxidase production (oxidase-negative), and non-motility.

^b Specific phenotypic characteristics include the appearance as cocci or coccobacilli on Gram stain, the ability to grow on MacConkey agar, and resistance to penicillin.

^c Formerly called *A. calcoaceticus* var *anitratius* and frequently not separated from other species due to the similarity in phenotypic test results i.e., *A. calcoaceticus/baumannii* complex or *A. baumannii/haemolyticus*.

^d Sheep Blood Agar