

First report of OXA-72 producing *Acinetobacter baumannii* in Romania

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Abstract

This is the first report of an OXA-72-producing *Acinetobacter baumannii* strain in Romania, isolated from chronic leg ulcer samples. Identification of the strain was performed using matrix-assisted laser desorption/ionization time-of-flight mass spectrometry. Presence of carbapenem resistance genes was investigated by PCR and sequencing. Our data support the spread of the *bla*_{OXA-72} gene in Eastern Europe. © 2016 The Authors. Published by Elsevier Ltd on behalf of European Society of Clinical Microbiology and Infectious Diseases.

Keywords: *Acinetobacter baumannii*, carbapenemase, chronic leg ulcer, Eastern Europe, multidrug-resistant, OXA-72

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Acinetobacter baumannii is a threatening opportunistic pathogen in hospital settings and is responsible for various infections, including bacteraemia, and urinary tract, skin and wound infections. Chronic leg ulcers have an increased risk of infection initiated either by resident microbiota or by exogenous microorganisms because of the absence of epidermis. *A. baumannii* contamination, particularly with multidrug-resistant strains, may lead to significant delays in wound healing and development of sepsis [1]. *A. baumannii* is often isolated from infected leg ulcers, mainly in diabetic patients [2]. Resistance to carbapenems (last-resort β -lactam antibiotics) in *A. baumannii* is mainly mediated by carbapenem-hydrolyzing Ambler class D-lactamases (CHDL) and has a major clinical and epidemiologic impact [3]. According to their amino acid sequence identities, the main acquired CHDLs are divided into four subgroups: OXA-23-like, OXA-24/40-like, OXA-58-like and OXA-143-like [4]. Until now the few studies performed on carbapenemase-producing *A. baumannii* isolates from Romania reported only the occurrence of OXA-23 and OXA-58, previously identified worldwide in this species [3–6].

In the present study, one carbapenem-resistant *A. baumannii* strain, ICUB30, isolated from chronic leg ulcers swabs in Bucharest, Romania, was selected after PCR screening for CHDL genes *bla*_{OXA-23-like}, *bla*_{OXA-24-like} and *bla*_{OXA-58-like} and further analysed by different approaches. The isolate was identified using a matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF) Biotyper (Bruker Daltonics, Bremen, Germany). Susceptibility testing was performed according to the recommendations of the European Committee on Antimicrobial Susceptibility Testing (<http://www.eucast.org>). Resistance to imipenem and meropenem was confirmed by the Etest method (minimum inhibitory concentration = 16 mg/L). The isolate was negative for metallo- β -lactamase production in the Etest assay. In addition, the respective isolate proved to be resistant to ticarcillin, ciprofloxacin and amikacin but was susceptible to ceftazidime, cefepime, rifampin and colistin. PCR screening of CHDL genes revealed the presence of *bla*_{OXA-24/40-like} gene and was negative for the other carbapenemase genes tested. The PCR reaction using primers for *bla*_{OXA-24/40-like} gene allows the amplification of a specific gene region. The amplicon was further sequenced and then analysed using the online application BLAST and the stand-alone software Genome ARTIST [7]. The analysis of the amplicon sequence (GenBank accession no. KX264327) revealed a 99% homology with the corresponding sequences pertaining to *A. baumannii* strain MAL carbapenemase OXA-72

(National Center for Biotechnology Information reference sequence, NZ_LKIB01000052.1) isolated from Serbia and *A. baumannii* strain K60 plasmid pABI20 carbapenemase OXA-72 (GenBank accession no. JX069966) isolated from Lithuania.

The OXA-72 enzyme was first reported in *A. baumannii* in Thailand in 2004 and is restricted to three main regions: South America (Brazil and Colombia), southern Asia (Japan, Taiwan) and Eastern Europe (mainly in Croatia, but also in Lithuania and Serbia) [8].

To our knowledge, this is the first report of the occurrence of OXA-72 in an *A. baumannii* clinical isolate from Romania. Our data support the spread of this OXA-24/40 variant in Eastern Europe, thus highlighting necessity of developing effective measures to diagnose and control multidrug-resistant *A. baumannii* infections in chronic wounds.

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Conflict of interest

None declared.

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