Acinetobacter spp. are non-fermentative, Gram-negative rods widely distributed in the environment. These species can be isolated from soil, water and also represent part of the endogenous biofilm of many human tissues such as skin, eye and respiratory tract. These pathogens can cause a wide range of opportunistic infections, mainly in elderly and immunocompromised patients or those with severe underlying diseases.

The clinical significance of Acinetobacter spp. has escalated lately due to their remarkable ability to develop resistance to several classes of antimicrobial agents. This characteristic in association with the capability of surviving for prolonged periods in the hospital environment provide these microorganisms with a persistent survival advantage.

This report describes the detection of co-production of OXA-58 and IMP-1 Carbapenemases in an Acinetobacter iwoffii clinical isolate and the complete sequence of the carbapenem-hydrolyzing beta-lactamase CATB7.

**INTRODUCTION**

Acinetobacter iwoffii is a hospital strain of Acinetobacter that has been frequently reported in the last few years. This species is mainly identified from clinical samples, as deep as from blood and respiratory system, and superficially from sites such as skin and soft tissue. A. iwoffii is an opportunistic pathogen that has been involved in several outbreaks in the hospital environment, mainly in hospitals where multidrug-resistant species are common. This species has already been reported to produce a Carbapenem-hydrolyzing beta-lactamase. This enzyme is responsible for the broad range of opportunistic infections, mainly in elderly and severe underlying diseases.

**METHODS**

A. iwoffii isolate (109-OAF84) was recovered from a skin and soft tissue infection in a hospital patient (April 2007). This isolate was recovered from a skin lesion and tested for susceptibility by CLSI broth microdilution methods. The isolate was selected for metabolism-5 beta-lactamase Acinetobacter iwoffii using Etest and imipenem- and meropenem-EDTA double-disk synergy test (DDST). Carbapenem-hydrolyzing carbapenemase (CHC) and MBLs were screened using Etest strip and resistant strains were confirmed by the meropenem-EDTA double-disk synergy test (DDST). The DDST was performed using meropenem and EDTA in a multiplex form. Amplicons obtained were sequenced by both strands. The nucleotide sequences and deduced amino acid sequences were analyzed using Lasergene software package (DNASTAR, Madison, WI) and compared with the corresponding sequences available through the internet using BLAST (http://www.ncbi.nlm.nih.gov/blast/).

**RESULTS**

A. iwoffii was recovered from skin and soft tissue infection in a 58-year-old female. It showed a MIC value of 8 µg/ml for imipenem, meropenem and eltrombopag, and ≤32 µg/ml for ceftriaxone and piperacillin-tazobactam. The isolate showed susceptibility to other classes of antimicrobial agents. The strain was characterized by the ability to survive for prolonged periods in the hospital environment providing these microorganisms with a persistent survival advantage.

**MATERIALS AND METHODS**

Bacterial isolate and species identification. A. iwoffii (109-OAF84) was recovered from Kanazawa University Hospital in April 2007. Species identification was performed with the Vitek 2 System (bioMérieux, Marcy l’Etoile, France) and confirmed by 16S rRNA sequencing analysis. The generated DNA sequence was compared with a DNA library using Bioinformatics Bacterial Identiﬁcation Module (BIBM) (http://bimb.en.kimia.i.u-tokyo.ac.jp/).

Antibiotic susceptibility testing. The isolate was tested by Kirby-Bauer disc diffusion method as described by the Clinical and Laboratory Standards Institute (CLSI) M100-S17 (2007). The antimicrobial agents were provided by MERCK (Darmstadt, Germany).

**Figures**

**Figure 1.** Schematic representation of Acinetobacter iwoffii strain and the complete sequence of the carbapenem-hydrolyzing beta-lactamase CATB7.

**Figure 2A**. ClustalW amino acid alignment of IMP-1 and OXA-58.

**Figure 2B**. ClustalW amino acid alignment of CATB3, CATB7, CATB8 and CTAB8.

**Table 1.** Antimicrobial susceptibility profile of an A. iwoffii clinical isolate.

**Table 2.** MIC values for the carbapenem-hydrolyzing against A. iwoffii clinical isolate and E. coli (TO9) harboring the beta-lactamase plasmid pIC123 and the vector pIC122 with no insert.

**CONCLUSIONS**

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**REFERENCES**


