Rapid characterization of carbapenemases produced by Imipenem-Resistant *A. baumannii*: First experience with the RESIST ACINETO immunochromatographic test from Coris Bioconcept

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INTRODUCTION

Imipenem-resistant *Acinetobacter baumannii* (IRAB) is one of the most commonly isolated multidrug-resistant bacteria (MDR) in a daily hospital practice.

Almost every isolated strain share the same antibiotic resistance profile, making phenotypic distinction difficult. However, the carbapenemases involved can vary a lot.

OBJECTIVES

The aim of this study is to differentiate isolated CRAB strains using a new tool: the RESIST ACINETO test from Coris Bioconcept.

MATERIAL AND METHODS

This is a prospective study conducted at the central laboratory of CHU Beni Messous over a period of seven months (September 2024 to March 2025).

Every imipenem-resistant *A. baumannii* strain isolated from various clinical samples was tested with the RESIST ACINETO test from Coris Bioconcept, which detects three types of carbapenemases: OXA-23, OXA-40/58, and NDM.

Fig.1: RESIST ACINETO kit

Fig. 2: Examples of positive RESIST ACINETO cassettes

RESULTS

During the study period, 81 CRAB strains were isolated. After excluding duplicates, 53 unique CRAB strains were tested with the RESIST ACINETO, allowing the identification of the following profiles:

- **Profile (1)**: OXA-40/58 ⇢ **N = 19** (35.85 %) ⇢ Major profile
- **Profile (2)**: OXA-23 ⇢ **N = 12** (22.64 %)
- **Profile (3)**: NDM ⇢ **N = 9** (16.98 %)
- **Profile (5)**: Co-expression of OXA-40/58 + OXA-23 ⇢ **N = 7** (13.21 %)
- **Profile (4)**: Co-expression of NDM + OXA-40/58 ⇢ **N = 6** (11.32 %)

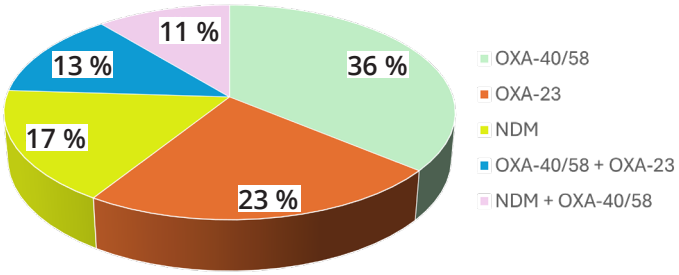

Fig. 3: Profiles found in *A. baumannii* using the RESIST ACINETO test (N=53)

DISCUSSION

To our knowledge, this is the first use of the RESIST ACINETO test in Algeria. This rapid test allowed for easy identification of at least five circulating profiles at CHU Beni Messous.

There may be more profiles present, since the test does not differentiate between OXA-40 and OXA-58 variants.

Previous studies at CHU Mustapha demonstrated that OXA-72 is the predominant variant in profile (1).

Further molecular characterization will be undertaken to confirm these findings.

CONCLUSION

Rapid phenotypic tests offer a simple and effective method to detect the main carbapenemases involved in CRAB resistance without relying on PCR.
They can be a good alternative for laboratories that do not have access to specialized molecular equipments.

REFERENCES

DESM thesis, Bachtarzi, 2019.

This document was inspired by the poster presented at the Algerian Society of Clinical Microbiology - 4th International Congress - May 30th - June 1st, 2025.