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Prospective evaluation of the OXA-48 K-SeT for the detection of OXA-48-type carbapenemase producing Enterobacteriaceae

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Background

Carbapenemase-producing *Enterobacteriaceae* represent a major health concern and a great challenge for clinical diagnostic laboratories. In France, OXA-48-like producing *Enterobacteriaceae* represent 86% of the CPE. In the current context of growing multidrug resistance, there is an urgent need for accurate and fast diagnostic tests to track antimicrobial resistance patterns in diagnostic laboratories

Objectives

We evaluated an immunochromatographic assay (OXA-48 K-SeT[®]) aiming to detect OXA-48-like-producing *Enterobacteriaceae* from culture colonies.

Methods

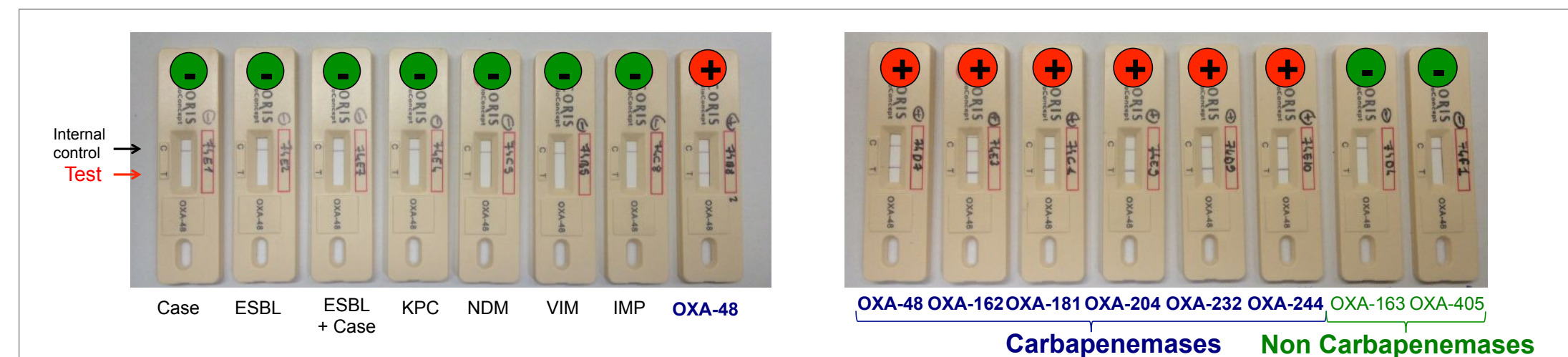
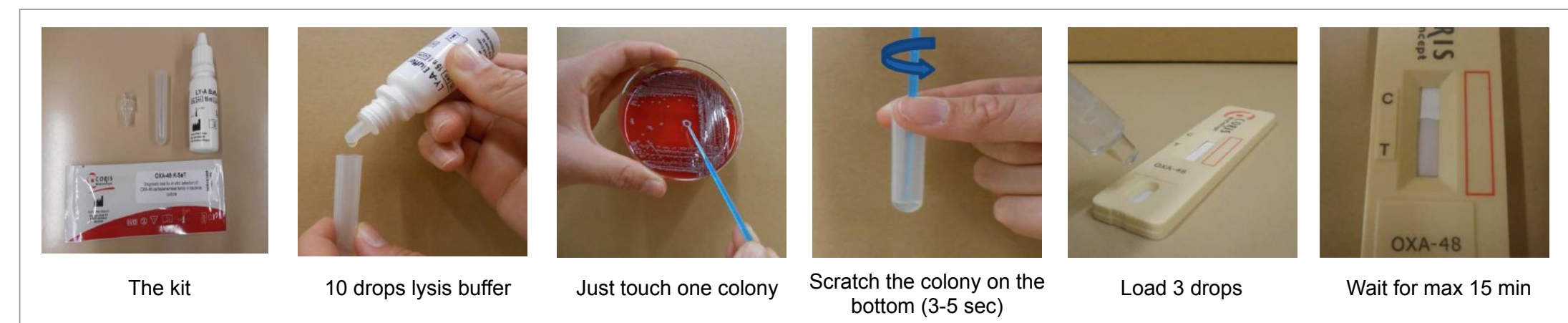
Strain collection

The OXA-48 K-SeT[®] was evaluated on 175 well-characterized *Enterobacteriaceae* including 55 non-carbapenemase- and 120 carbapenemase-producers, among which 40 expressed OXA-48-variants displaying carbapenemase activity (21 OXA-48, 1 OXA-162, 9 OXA-181, 5 OXA-204, 2 OXA-232 and 2 OXA-244) and 2 (OXA-405 and OXA-163) that were lacking carbapenemase activity.

Prospective evaluation

Two hundred consecutive *Enterobacteriaceae* with decreased susceptibility to carbapenems sent to the French NRC for Antibiotic Resistance from February to March 2015 were prospectively studied using the Carba NP test, PCR and OXA-48 K-SeT[®].

Results



The OXA-48 K-SeT[®] assay detected all the 40 well-characterized OXA-48-like producers displaying carbapenemase activity but not those lacking this activity (OXA-405 and OXA-163).

No false positive result was observed. Among the 200 isolates received, 89 were carbapenemase-producers as revealed by Carba NP test and PCR. The OXA-48 K-SeT[®] assay perfectly identify the 23 OXA-48, the 10 OXA-181 and the 1 co-producing OXA-48 and NDM-1 isolates. The 25 isolates that produced a different carbapenemase (1 KPC-2, 20 NDM-1, 2 NDM-7 and 2 VIM-1) and the 111 non-carbapenemase-producing *Enterobacteriaceae* were negative.

Conclusions

The data presented in this study support that the OXA-48 K-SeT[®] is a very accurate test to detect bacteria producing OXA-48-like carbapenemases. OXA-48 K-SeT[®] can be particularly helpful in areas with high prevalence of OXA-48-like carbapenemases, such as France.

Acknowledgements

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