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Paper Poster Session
Culture-based diagnostic bacteriology

Impact of the isolation medium for the detection of OXA-48 and KPC-producing Gram-negative bacteria by immunochromatographic assays

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Background: In the current context of growing multidrug resistance, the development of new rapid diagnostic tests to track antimicrobial resistance constitutes one priority core action. We recently developed and evaluated two immunochromatographic assays (ICAs) aiming to detect OXA-48-like and KPC-like-producing Enterobacteriaceae from culture colonies on TSA blood agar. Here we assessed the impact of different culture isolation media on the performance of the tests.

Material/methods: ICAs (OXA-48 and KPC K-SeT, Coris Biconcept) were performed and results interpreted after 15 min as per manufacturers' instructions.For OXA-48 K-SeT, a total of 22 carbapenemase producers (18 OXA-48-like, one each of VIM-1, KPC-2, NDM-1 IMP-4) and one carbapenem-non-susceptible, non carbapanemase CTX-M-15-producing *E. coli* strain were tested. For KPC K-SeT, 10 Enterobacteriaceae (6 KPC, one each of OXA-48, IMP, NDM, CTX-M-15) and one KPC-2 producing *Pseudomonas aeruginosa* were grown at 37°C for 24 h prior to testing on 18 non-selective, selective and screening agar. OXA-48 and OXA-181-positive bacteria grown on three different media (TSA, chromID BLSE and chromID OXA-48) were also left at room temperature and colonies tested once a day during 15 days to evaluate the performance of the test on aged cultures.

Results: Overall no false negative results were observed with any of the two ICAs whatever the culture media used for performing the tests. The OXA-48 K-SeT detected all 18 OXA-48 like carbapenemases, including OXA-48 and different variants (OXA-162, OXA-181, OXA-204, OXA-232, OXA-244). The KPC K-SeT did also correctly detect all KPC-2 and 3 variants including KPC-producing *P. aeuginosa* independently of the isolation medium. Of particular interest, Drigalski and McConkey agar were found compatible with the use of both ICAs unlike for use with rapid colorimetric rapid imipenem hydrolysis tests. The presence of OXA-48 like-producing isolates could be detected by the OXA-48 K-SeT on older cultures aged up to 15 days (test not performed for KPC K-SeT).

Conclusions: All isolation media tested were found compatible with the use of OXA-48 and KPC K-SeTs. In addition colonies do not need to be freshly cultured which further supports the robustness of the test and its applicability in the routine workflow of a microbiological laboratory. OXA-48 and KPC K-SeTs are simple, inexpensive tests which prove efficient, robust and easy to implement as first line testing for rapid confirmation of these two important carbapenemase types.