P2830 A culture medium for screening linezolid-resistant Gram-positive bacteria

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Background: Considering the large diffusion of methicillin-resistant *S. aureus* and *S. epidermidis* and of vancomycin-resistant *E. faecium* and *E. faecalis*, oxazolidinones (linezolid [LZD] and others) are of increasing use worldwide. An increasing occurrence of LZD-resistant isolates is reported worldwide. The main mechanism of resistance to LZD in Gram-positive bacteria corresponds to a mutation in the 23S rRNA gene. In addition, acquired LZD resistance genes have been reported, namely the *cfr*, *optrA*, and *poxtA* genes. The *cfr* gene encodes a methylase conferring resistance not only to LZD but also to phenicols, lincosamides, pleuromutins, and streptogramins and has been identified in *S. aureus*, enterococci, *Streptococcus suis*, and *Bacillus* spp.

Materials/methods: The optimal screening medium retained was based on the Brain-Heart Infusion (BHI) medium containing linezolid at 1.5 mg/L. Colistin sulfate was added as anti-Gram negative molecule at a final concentration of 15 mg/L, and amphotericin B was added as anti-fungi molecule at a final concentration of 10 mg/L.

The SuperLinezolide medium was evaluated by using linezolid-susceptible (n=20) and linezolid-resistant (n=17) Gram-negatives isolates, including Cfr producers. Spiked fecal samples were also tested, being made by adding 100 μl of each strain dilution to 900 μl of fecal suspension that was obtained by suspending 5 g of freshly pooled feces in 50 ml of distilled water.

Results: The lowest limit of detection was above the cut-off value of 10³ CFU/ml, being ≥ 1 x 10⁶ CFU/ml for all the linezolid susceptible isolates. On the contrary, all the linezolid-resistant isolates grew on the SuperLinezolide medium at 24 h and the lowest limit of detection was below the cut-off value. Stools spiked with linezolid-resistant isolates grew also with a lowest detection limit ranging from 10¹ to 10² CFU/ml.

Conclusions: This is the first screening medium linezolid-resistant Gram-positive strains. Its use may contribute to rapidly identify linezolid-resistant carriers and to limit its spread in hospital settings.