Extended-spectrum beta-lactamases screening agar with AmpC inhibition

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The serious increase in the prevalence of extended-spectrum beta-lactamases (ESBLs) worldwide creates a need for effective and easy to perform screening methods for detection [1]. The use of an ESBL screening agar would allow rapid recognition and isolation of ESBL-producing bacteria. The currently available screening agars have low specificity, mainly due to growth of species with inducible AmpC beta-lactamases [2, 3]. The inhibition of AmpC beta-lactamases by cloxacillin is used in ESBL confirmation tests [4]; however, to the best of our knowledge, cloxacillin for ESBL screening has not been described. We developed an ESBL screening agar (ESA), which contains cloxacillin to inhibit growth of AmpC-producing species and vancomycin to inhibit growth of *Enterococci*, and compared it with the commercially available, selective medium for screening of presumptive ESBL Enterobacteriaceae, namely, BLSE agar (AES Laboratory, France).

The ESA consists of two MacConkey agars: one containing ceftazidime 1.0 mg/l, and the other cefotaxime 1.0 mg/l, cloxacillin 400 mg/l, and vancomycin 64 mg/l. The BLSE agar is a commercial double-plate agar (Mac-
agar. The prolongation of incubation did not improve the sensitivity of the ESA or BLSE agars. The better performance of the ESA was mainly due to less false positive results due to AmpC-producing strains, especially Enterobacter spp. (false positive results for Enterobacter spp. with ESA was 29% or 16/55 and with BLSE was 89% or 49/55). The specificity of ESA for screening of ESBL-producing strains was significantly better than the specificity of BLSE agar, which reduced the number of unnecessary confirmations. A quick and easy to use screening method to facilitate the detection of ESBL-producing Enterobacteriaceae in clinical settings is very important for optimal therapy and early application of appropriate infection control measures.

The ESA is, however, intended as a screening tool; therefore, it is important to note that any growth on the plates should not be taken as definitive proof of ESBL production, which can only be achieved by use of appropriate confirmatory tests. Despite the limitations of this preliminary study, our results show that ESA is a sensitive and convenient method to screen for ESBL-producing organisms. Further evaluation should be made with clinical specimens originating directly from human carries.

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