A Clinical Evaluation of Thermo Scientific Anaerobe Recovery and Isolation Agar (A.R.I.A. medium)

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Overview

Methods: One hundred clinically relevant anaerobes and 42 clinical specimens were inoculated onto A.R.I.A. medium with 5% horse blood (with and without 75 µg/ml neomycin) and Thermo Scientific™ Fastidious Anaerobe Agar (FAA) with 5% horse blood (with and without 75 µg/ml neomycin). A 5 µg metronidazole disc was added and plates were incubated anaerobically for up to 6 days. Plates were observed for growth, β-haemolysis, zone of inhibition around metronidazole disc and fluorescence.

Results: A.R.I.A. media (figures 1 and 2) performed very well when compared with the FAA equivalent for the isolation of anaerobic bacteria both in pure culture and directly from clinical specimens.

Introduction
Anaerobic bacteria are important pathogens that can cause a variety of infections in humans1. Accurate species determination of anaerobes from clinical samples has become increasingly important with the re-emergence of anaerobic bacteremia and prevalence of multiple-drug-resistant microorganisms2. Any species determination of anaerobes from clinical samples has become increasingly important with the re-emergence of anaerobic bacteremia and prevalence of multiple-drug-resistant microorganisms. Any culture media used for this purpose should be able to isolate and provide good recovery of a wide range of anaerobic bacteria commonly found in an extensive number of clinical samples.

Methods
The study was conducted in two stages:

Stage 1
A panel of 100 clinically relevant anaerobes covering a broad range of genera and species (originally isolated and identified from clinical material by the Anaerobe Reference Unit using standard procedures (including partial (~450bp) 16S rRNA sequence analysis) was selected. Isolates were cultured from clinical material by the Anaerobe Reference Unit using standard procedures. A panel of 100 clinically relevant anaerobes covering a broad range of genera and species (originally isolated and identified from clinical material by the Anaerobe Reference Unit using standard procedures (including partial (~450bp) 16S rRNA sequence analysis) was selected. Isolates were cultured from clinical material by the Anaerobe Reference Unit using standard procedures.

Stage 2
Forty two fresh clinical specimens (29 assorted pus/fluid samples and 13 blood cultures) were obtained from the on-site clinical microbiology laboratory. A 10 µl loop of specimen was streaked onto each of the four media. Application of a metronidazole disc, incubation and examination were as described for stage 1.

Results
A total of 98 pure isolates (comprising 50 Gram-positive- and 39 Gram-negative organisms) were recovered on FAA and A.R.I.A. media. The remaining two isolates were non-viable on any medium. Twenty four of the 98 organisms isolated (comprising 20 Gram-positive- and four Gram-negative organisms) yielded no growth on FAA and A.R.I.A.-N. Of the 42 clinical specimens examined, 13 pus/fluid samples yielded no anaerobic growth after 6 days incubation. Ten pus/fluids and six blood cultures yielded facultative isolates only after 6 days. The remaining 13 specimens (7 blood cultures, 6 pus/fluids) yielded a total of 22 anaerobes/microaerophiles. Four of these also yielded facultative organisms. Up to six distinct isolates were isolated from individual specimens.

Conclusion
Overall, performance of A.R.I.A. and A.R.I.A.-N was comparable to FAA and FAA-N in terms of growth characteristics, though slight differences in fluorescence were observed for some organisms. A.R.I.A. and A.R.I.A.-N can be recommended as a suitable alternative to FAA and FAA-N for the isolation of anaerobic bacteria both in pure culture and directly from clinical specimens.

References