Thermo Scientific A.R.I.A. Medium: A New Medium For Isolation Of Anaerobic Bacteria

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Overview

Purpose: The objective of this trial was to evaluate the performance of the new Thermo Scientific ™ Anaerobe Recovery and Isolation Agar (A.R.I.A.™ medium,) (Thermo Fisher Scientific) against Thermo Scientific™ Fastidious Anaerobe Agar (FAA) with 5% horse blood (Thermo Fisher Scientific) . Both agars were tested with and without the addition of neomycin.

Methods: Anaerobe isolates and patient samples were plated onto all four anaerobic media. Plates were incubated anaerobically at 36±1°C and read after 24 hr., 48 hr., and 72 hr.

Results: Performance of A.R.I.A. media was comparable to FAA.

Introduction

Anaerobic bacteria are the causative agents of a wide variety of human infections of the skin, soft tissues and the respiratory, gastrointestinal, and female genital tracts[1]. Culture is a common method of diagnosing anaerobic infections, and it is important for the microbiology laboratory to be able to easily determine colonial and cellular morphology of anaerobic species[2]. The type of agar used can have a significant effect on these characteristics.

A.R.I.A. medium (figures 1 and 2) is designed to isolate and allow accurate species determination of anaerobic bacteria from clinical samples within 24-72 hr.

Methods

Suspensions of 102 anaerobe isolates previously isolated from clinical samples were prepared to a 1.0 McFarland standard in sterile saline.

A 10 µl loop of each suspension was inoculated onto A.R.I.A. medium with 5% horse blood (with and without 75 µg/ml neomycin) and FAA with 5% horse blood (with and without 75 µg/ml neomycin).

A further 20 isolates from the Anaerobe Reference Unit , Cardiff, UK were also tested. In addition, 20 swab samples collected from a range of clinical sites including wound, genital, ear, throat and pus were inoculated onto all four plates. A 5 µg metronidazole disc was added to the primary bed of each inoculum.

All plates were incubated at 36±1°C under anaerobic conditions and read at 24, 48 and 72 hr. Isolates from Anaerobe Reference Unit were subcultured after 96 hr. incubation onto non-selective agar to check for viability.

FIGURE 1. A.R.I.A. medium

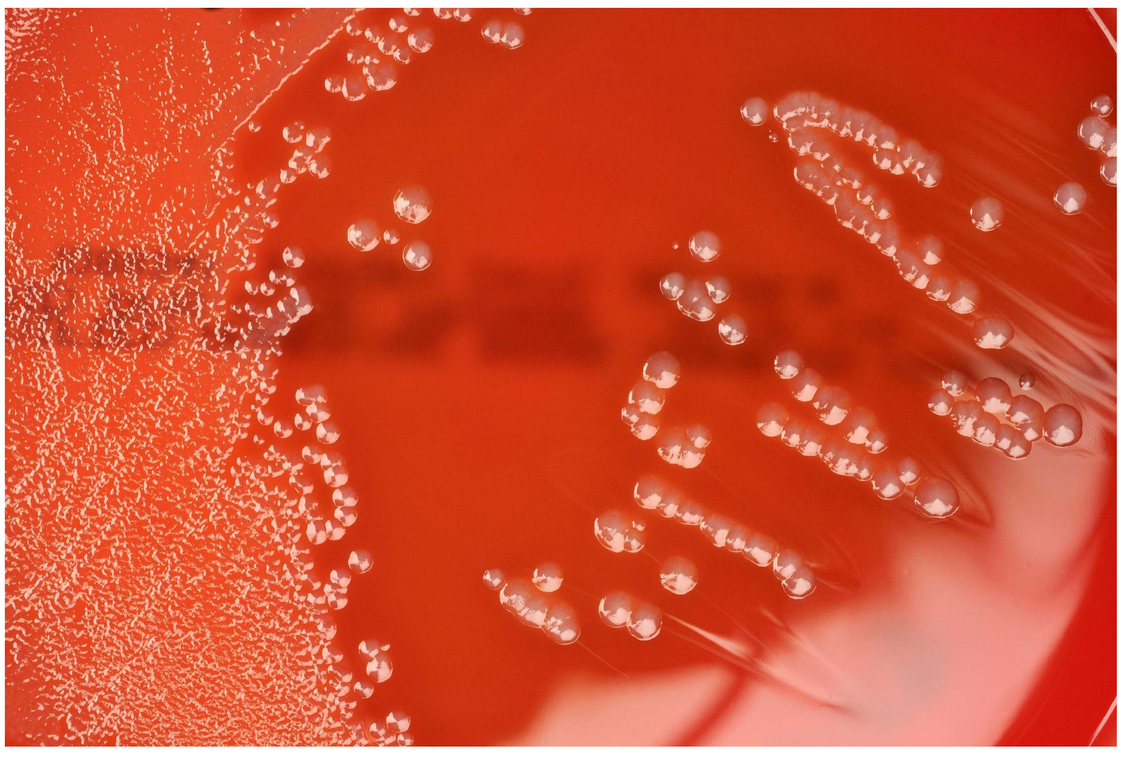
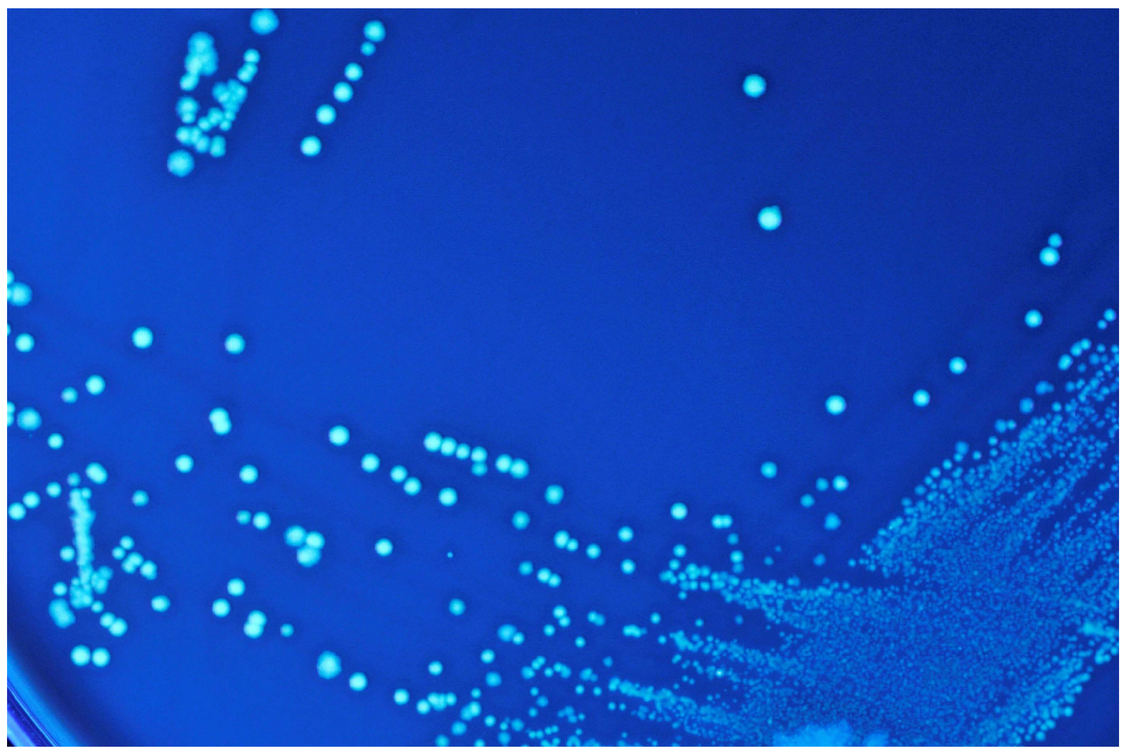


FIGURE 2. A.R.I.A. medium under fluorescent light



Results

Recovery of organisms from isolates and clinical samples on A.R.I.A.-based media was comparable to that on FAA, giving high-yield growth on non-selective as well as the neomycin containing product.

Colony morphology, including colour, size, shape and haemolysis on A.R.I.A. media was similar to FAA products.

Odour from the majority of isolates tested on A.R.I.A. media was also comparable to FAA media.

Fluorescence of cultures under UV light was stronger on A.R.I.A. media compared to FAA with a brighter, more vibrant fluorescence seen.

All subcultures performed after 96 hr. incubation remained viable, demonstrating that A.R.I.A.-based media reliably recover and maintain viable colonies, facilitating accurate and speedy diagnosis.

Conclusion

A.R.I.A. media was found to be a suitable alternative to FAA.

References

1. Delany, M. L., Onderdonk, A. B. (1997) Evaluation of the AnaeroPack System for Growth of Clinically Significant Anaerobes Journal of Clinical Microbiology **35(3)**, p. 558–562.
2. 2. Head, C. B., Ratnam, S. (1987) Comparison of API ZYM System with API AN-Ident, API 20A, Minitek Anaerobe IL, and RapID-ANA Systems for Identification of Clostridium difficile. Journal of Clinical Microbiology **26(1)**, p. 144-146.

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