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Chromogenic media for the detection of Salmonella enterica serovar Paratyphi A in human stool samples: evaluation in a reference setting

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Abstract

Detection of Salmonella Paratyphi A stool carriers by conventional stool culture media is hindered by the absence of hydrogen sulphide production compared to most other Salmonella serovars. This study evaluated the detection of Salmonella Paratyphi A in stool samples using Salmonella chromogenic media compared to a conventional medium. Four chromogenic media, COMPASS Salmonella agar (Biokar Diagnostics, Beauvais, France), BBL™ CHROMagar™ Salmonella (BD Diagnostics, Erembodegem-Aalst, Belgium), Brilliance™ Salmonella agar (Oxoid Ltd., Basingstoke, UK) and Salmonella PLUS CHROMagar™ (CHROMagar, Paris, France), were compared to conventional Salmonella-Shigella agar (Oxoid Ltd.). The colony morphology of 29 freshly grown stock isolates (Salmonella and competing organisms) was assessed. The limit of detection (LOD) was also determined using saline and stool suspensions. Finally, recognizability of Salmonella Paratyphi A isolates was assessed using 20 human stool samples spiked with different concentrations of Salmonella Paratyphi A. All Salmonella Paratyphi A isolates demonstrated detectable growth with typical purple-coloured colonies that could be clearly differentiated from competing organisms on all four chromogenic media. The LOD for Salmonella Paratyphi A was 10^3 colony-forming units (CFU)/ml for all media, except for Brilliance agar (10^5 CFU/ml of stool). Salmonella Paratyphi A was easy to differentiate from competing organisms in the spiked stool samples. Colony yields improved when an enrichment step (Selenite-F broth (BD Diagnostics, Erembodegem-Aalst, Belgium)) and prolonged incubation for 48 h were performed. Chromogenic media demonstrated good specificity and a low LOD for the detection of Salmonella Paratyphi A in stool samples.

Keywords: Agar; Carriage; Chromogenic compounds; Culture media; Faeces/microbiology; Humans; Salmonella.

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