Improving diagnostics of diarrheagenic Escherichia coli by use of a new chromogenic medium

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Introduction

Diarrheagenic E. coli (DEC) are a common cause of diarrhoea in humans. They are heavily underdiagnosed in the routine laboratory due to the difficulty of differentiating them from E. coli of the commensal flora.

Therefore we tested a collection of E. coli of different pathotypes characterized as shown below by using a new selective chromogenic medium developed primarily for screening of shiga toxin-producing E. coli (STEC).

Methods

145 E. coli strains previously serotyped were screened for the presence of virulence markers of STEC, EPEC and Enterohaggregative E. coli (EAEC) by PCR (eae, stx-1, stx-2, aggR, cvd432, east1 and pic). The adherence phenotype on Hep2 cells was also determined.

This yielded 22 STEC, 47 EAEC, 21 EPEC and 55 E. coli harbouring none of the virulence factors tested for. These isolates were cultivated on ChromAgar STEC (Mast Diagnostica, Reinfeld) as by manufacturer’s instructions.

Results

- 39 of 145 E. coli grew as mauve colonies
- 16 STEC (73%) displayed mauve colonies, among them serogroups O26, O104, O145 and O157
- 5 EPEC (24%) grew mauve on ChromAgar STEC, 4 of these belonging to serogroup O26
- 13 EAEC (28%) showed mauve colonies on ChromAgar STEC
- EPEC and EAEC of serogroups O145 and O157 were not able to grow
- 5 E. coli without known virulence factors (9%) showed growth on ChromAgar STEC

Conclusion

- ChromAgar STEC is a useful selective medium for the most prevalent STEC serotypes (O26, O104, O145, O157)
- Few STEC (serogroups O91 and O103) are suppressed in growth
- Some EAEC and EPEC strains also grow as mauve colonies
- ChromAgar STEC is a helpful tool for STEC screening and may support EAEC and EPEC diagnostics

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