

# Chromogenic agar and agglutination identification of Shiga toxin-producing *E. coli*



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## INTRODUCTION

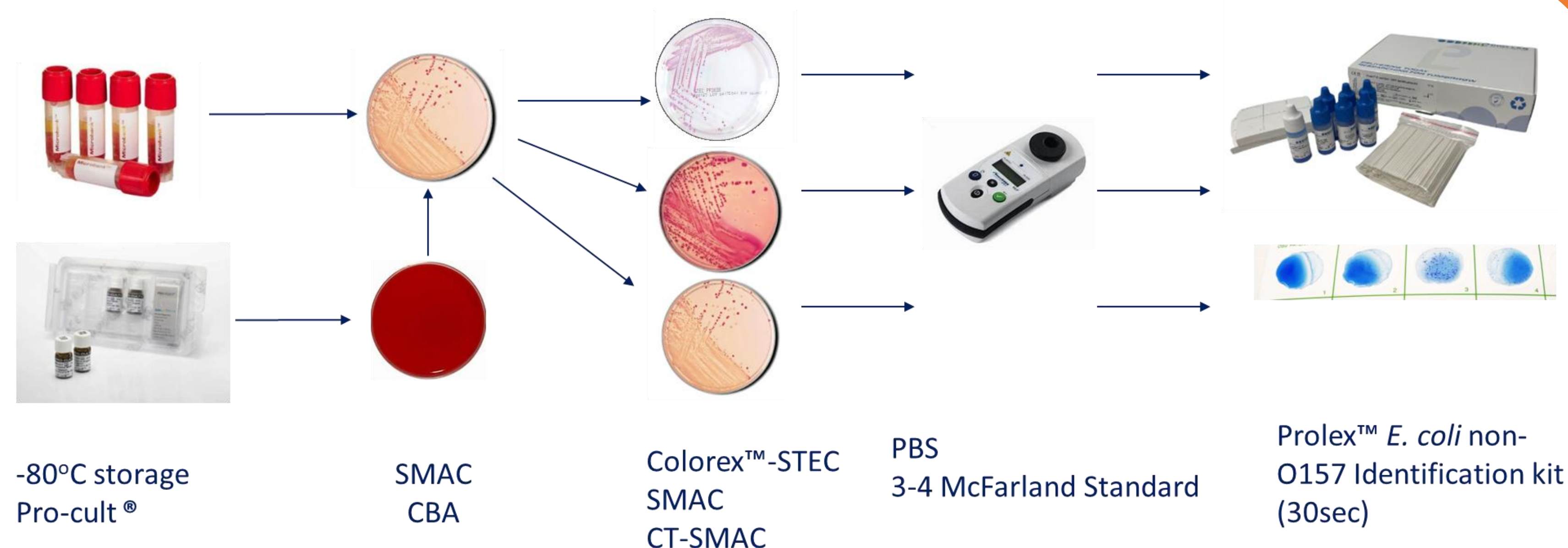
- Shiga toxin-producing *E. coli* (STEC) are foodborne pathogens that can cause severe systemic disease<sup>1</sup>
  - STEC isolation from patient samples is essential for whole genome sequencing (WGS) enabling cluster detection and outbreak tracing
  - In Scotland, only a small number of laboratories screen for non-O157 STEC - the majority send high-risk faeces to SERL for PCR testing<sup>2</sup>. These are cultured on SMAC and CTSMAC and PCR performed on individual colonies, which is time consuming and costly
- Use of Colorex™-STEC media in conjunction with the Prolex™ *E. coli* Identification kit may offer a more efficient method of isolation

## METHODS

The study panel comprised:

- 32 STEC of varying serotypes
- 18 non-STEC *E. coli*
- 14 other enteric bacteria

Isolate growth was assessed on SMAC, CTSMAC and Colorex™-STEC plates and the Prolex™ kit was used to test all isolates



## Colorex™-STEC media supports the growth of common non-O157 STEC serogroups and these are rapidly identified using the Prolex™ *E. coli* Non-O157 Identification kit (Pro-Lab)

## RESULTS

- All STEC growing on Colorex™-STEC plates presented as mauve-coloured colonies; other enteric bacteria were inhibited or had blue/colourless colonies, non-STEC *E. coli* had variable growth of mauve colonies
  - 22 of 32 (68.8%) STEC tested grew well on Colorex™-STEC plates (Figure 1)
  - Growth associated with *terD* gene
- E. coli* O45 and O103 showed variable growth on Colorex™-STEC and CTSMAC plates (Figure 2)
  - 100% specificity and strong agglutination reactions were observed from all plate types using Prolex™ *E. coli* non-O157 Identification kit: (O26, O45, O103, O111, O121, O145)

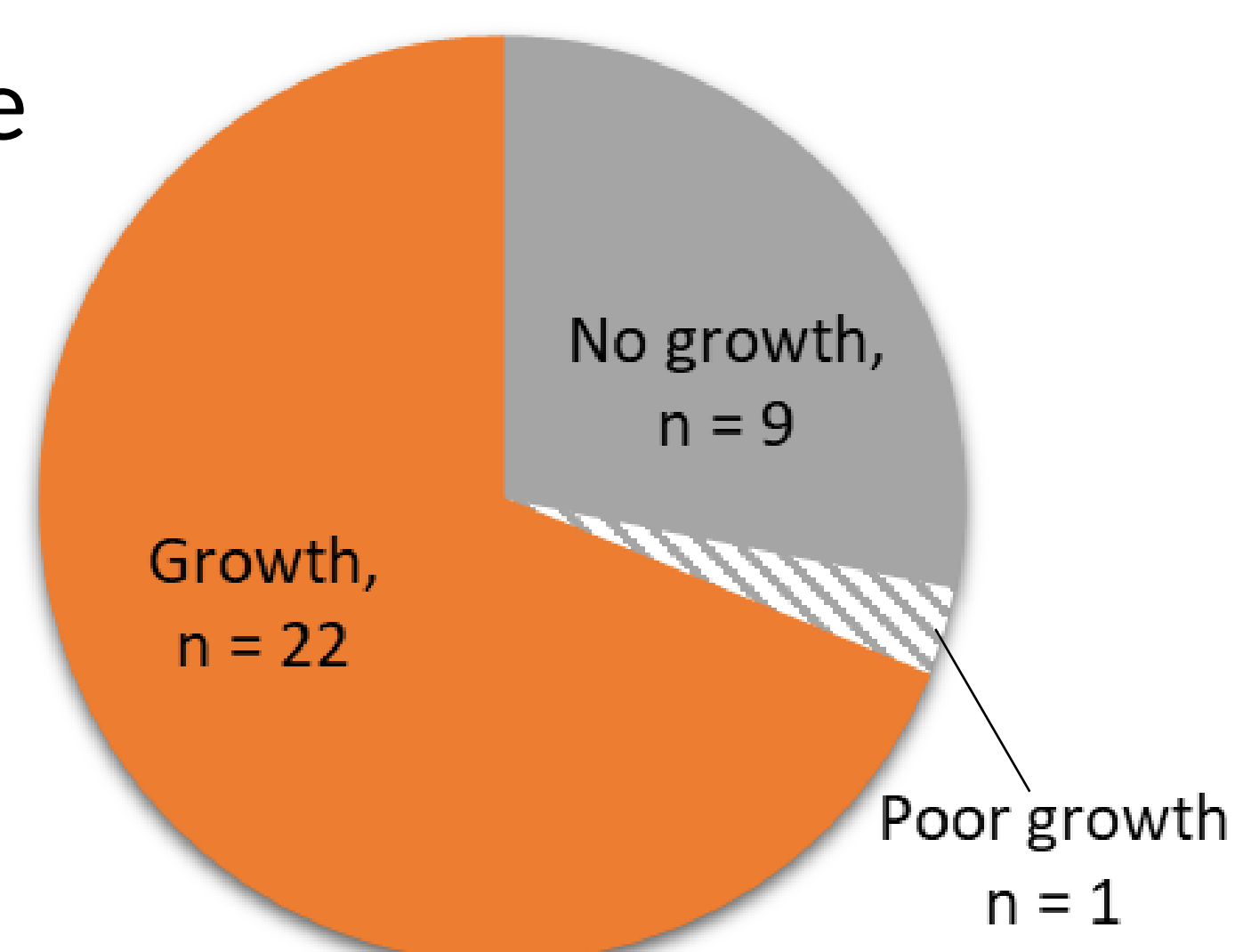


Figure 1. Growth of STEC isolates on Colorex™ STEC plates

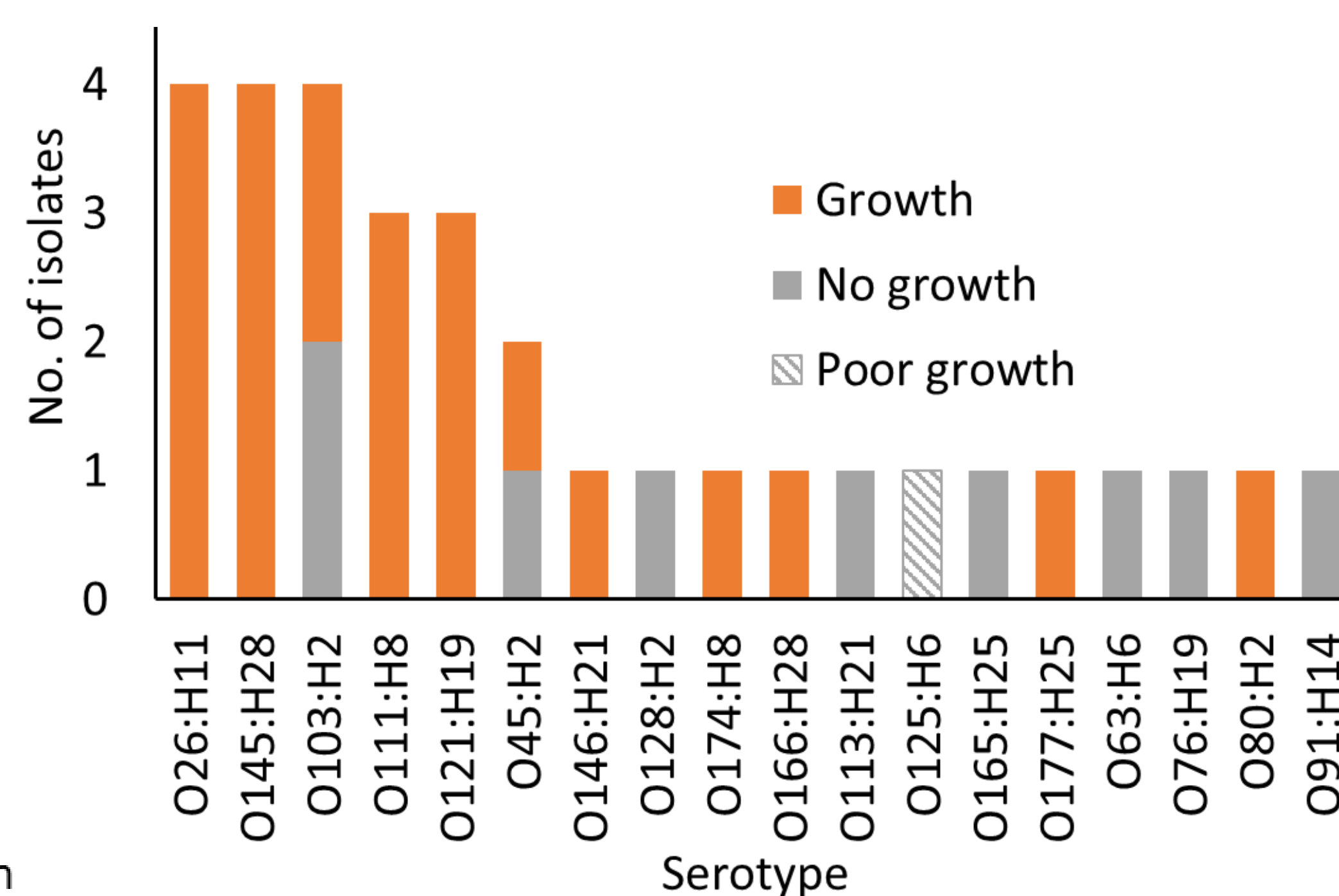


Figure 2. Growth of individual serotypes on Colorex™ STEC plates, 1 isolate had poor growth insufficient for testing

## DISCUSSION

- Colorex™-STEC media supports the growth of *E. coli* O26 and O145 STEC (in addition to O157) - predominant STEC serogroups in Scotland<sup>3</sup>
  - Some STEC serotypes did not grow or showed variable growth - related to lack of *terD* gene, some non-STEC *E. coli* will grow on Colorex™-STEC media
- This test combination provides a reliable and efficient method for detection of specific *E. coli* serogroups possessing *terD*. We are currently assessing how this powerful combination might be included in a targeted way in the SERL workflow

## References:

- Kaper J, Nataro J & Mobley H. Pathogenic *Escherichia coli*. *Nat Rev Microbiol* 2, 123–140 (2004).
- <https://edinburghlabmedicine.co.uk/specialities/reflab/serl>
- Food Standards Scotland (2020) Whole genome sequence typing and analysis of non-O157 STEC. <https://www.foodstandards.gov.scot/publications-and-research/publications/whole-genome-sequence-typing-and-analysis-of-non-O157-stec>



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