FACULTY OF VETERINARY MEDICINE
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EVALUATION OF MEDIA FOR THE ENUMERATION OF *C. PERFRINGENS* FROM POULTRY FAECES

BACKGROUND

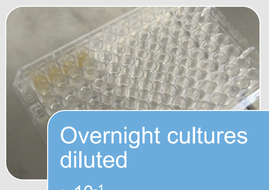
Enteric diseases caused by *Clostridium perfringens* are frequently associated with overgrowth of the organism in the intestinal tract. In subclinical disease or in healthy animals, numbers of *C. perfringens* in the gut are often low. Isolation of *C. perfringens* in faeces of these animals can be quite challenging with the currently used media, due to the presence of other hemolytic strains and overgrowth of undesirable facultative anaerobes.

OBJECTIVE

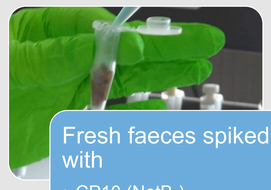
This study compares 4 selective media for the enumeration and easy and fast detection of *C. perfringens* in faecal samples from poultry.

METHODS

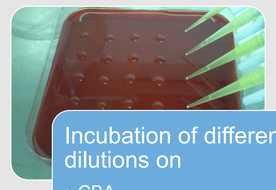
In this study four different media were used for recovery of different *C. perfringens* strains from fresh poultry faeces: Columbia blood agar (CBA) [1], tryptose sulphite cycloserine agar (TSC) [2], Shahidi-Ferguson-perfringens agar (SFP) [3] and CHROMagar™ *C. perfringens*. Fresh poultry faeces were spiked with beforehand diluted *C. perfringens* overnight cultures and subsequently incubated overnight on different media.



Overnight cultures diluted
- 10^{-1}
- 10^{-3}
- 10^{-5}
- 10^{-7}



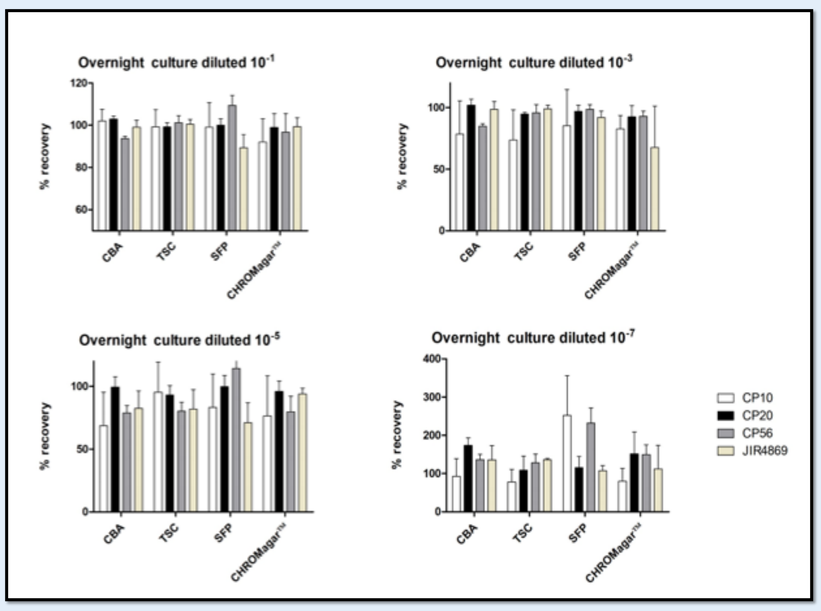
Fresh faeces spiked with
- CP10 (NetB-)
- CP20 (NetB-)
- CP56 (NetB+)
- JIR4869 (NetB+)



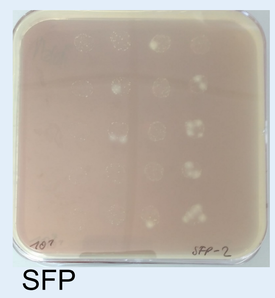
Incubation of different dilutions on
- CBA
- TSC
- SFP
- CHROMagar™

RESULTS

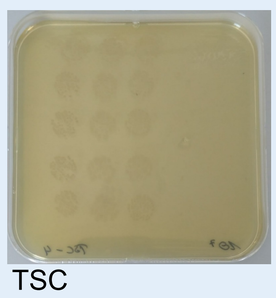
The diagram shows % recovery of different *C. perfringens* strains from faeces on different media. No significant difference in % recovery could be observed between the tested media for all the strains ($p > 0.5$).



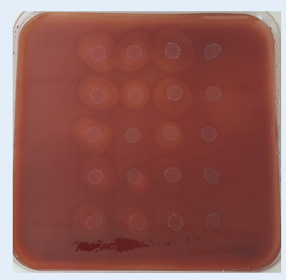
C. perfringens identification from previously spiked fresh poultry faeces was assessed using four different media. On CBA a typical hemolytic zone appears around *C. perfringens* colonies, while on SFP an opaque halo can be observed and on TSC, *C. perfringens* colonies are black. On CHROMagar™, *C. perfringens* colonies are pink, whereas other strains are blue.



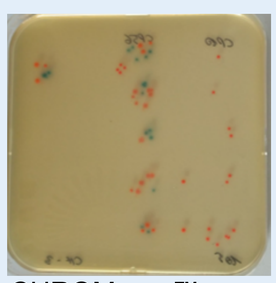
SFP



TSC



CBA



CHROMagar™

CONCLUSIONS

In conclusion, the results of this study show that there is no significant difference between the four tested media for recovery of different *C. perfringens* strains from fresh poultry faeces. However, when assessing the ease of *C. perfringens* identification on CB agar, TSC agar, SFP agar and CHROMagar™, it became clear that due to overgrowth of other anaerobes and hemolytic strains, identification of *C.perfringens* can be difficult on CBA, SFP and TSC. CHROMagar™ allows an easy and fast detection of *C. perfringens* colonies due to their pink appearance which makes it very easy to distinguish them from colonies of other strains, since those appear blue.

REFERENCES

[1] Ellner et al. A new culture medium for medical bacteriology. *American journal of clinical pathology.*1966.45:4. pp. 502-504.

[2] Harmon et al. Improved medium for enumeration of Clostridium perfringens. *Applied Microbiology*. 1971.4:22.pp. 688-692.

[3] Shahidi et al. New quantitative, qualitative, and confirmatory media for rapid analysis of food for Clostridium perfringens. *Applied Microbiology*.1971.21.pp. 500-506.

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