

# Are we underestimating the prevalence of *C. hyointestinalis*?

## Comparison of culture-based detection methods from dairy cattle faeces

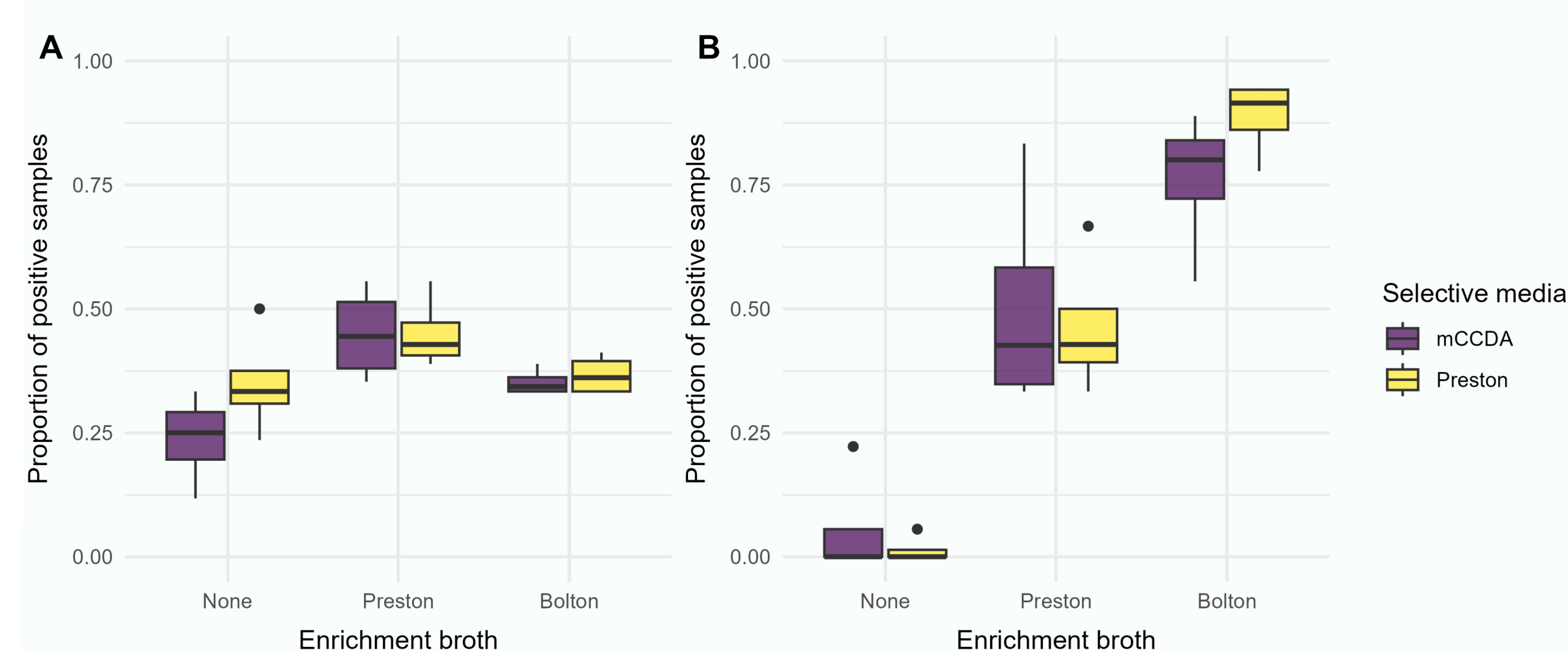
**Standards provide guidelines for detecting and enumerating *Campylobacter* in food and animal samples. However, they are primarily aimed at thermotolerant species such as *C. jejuni* and *C. coli*.**

### Background

*Campylobacter* is one of the most common causes of human bacterial gastroenteritis. While *C. jejuni* is usually considered the most common *Campylobacter* spp. in cattle, they can be colonised by several different *Campylobacter* spp. This study used several different culture-based methods to compare their performance in detecting *Campylobacter* from cattle faeces.

### Results

*C. jejuni* and *C. hyointestinalis* were the only detected *Campylobacter* spp. The number of detected *C. jejuni* and *C. hyointestinalis* varied between the methods, and the methods performed differently between the bacteria. Plot A = *C. jejuni*; Plot B = *C. hyointestinalis*

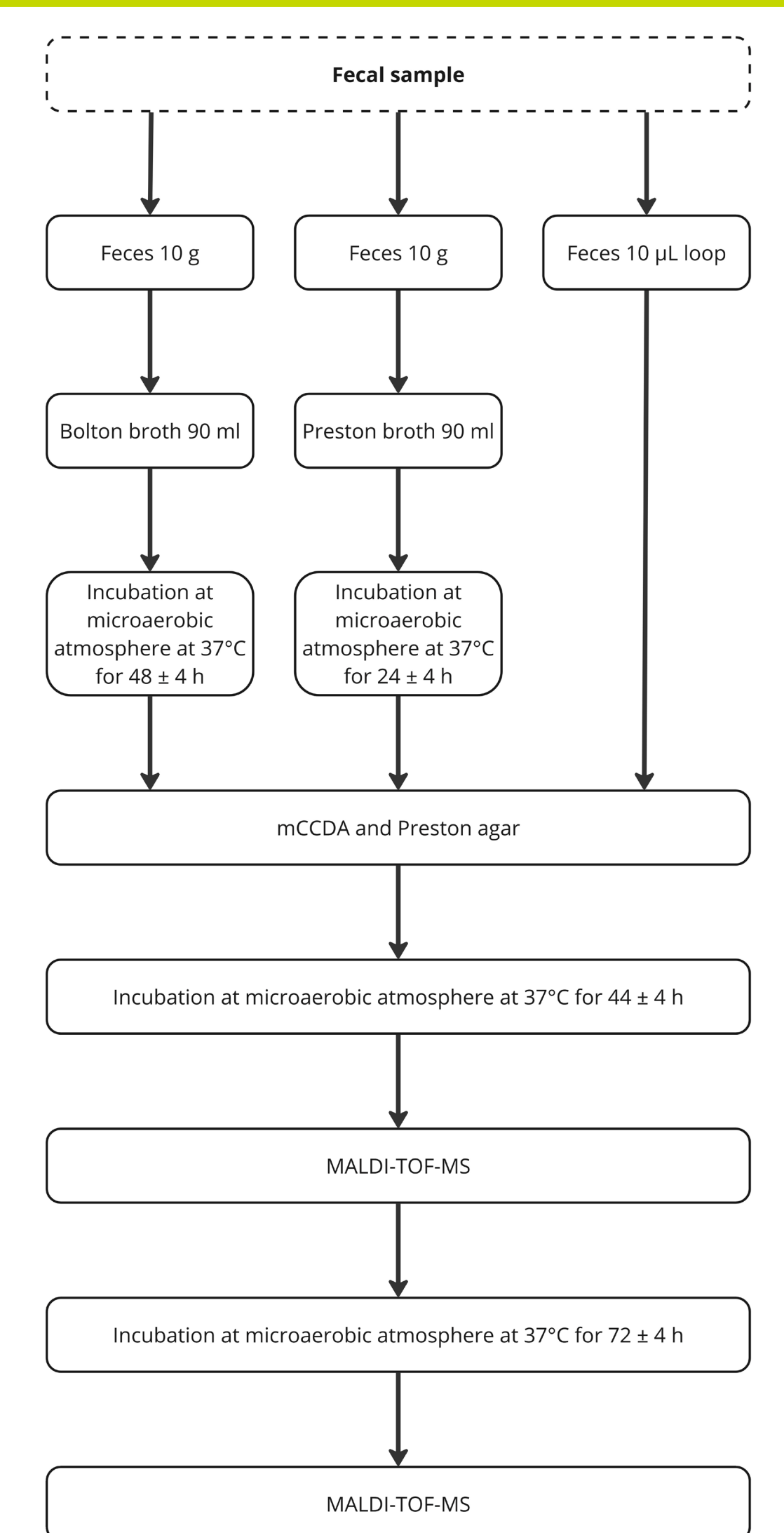


The prevalence of *C. hyointestinalis* was substantially higher than usually reported in the literature.

Sampling time	Prevalence (%)		
	<i>C. jejuni</i>	<i>C. hyointestinalis</i>	<i>C. jejuni</i> and <i>C. hyointestinalis</i>
1	66.7	77.8	44.4
2	61.1	94.4	50
3	44.4	88.9	38.9
4	41.2	94.1	41.2

### Methods

Rectal faecal samples were collected 4 times on 3-5 week intervals from 18 dairy cows. The study was conducted during summer 2024 at the SLU research farm in Sweden. The samples were analysed for *Campylobacter* spp. using 6 different method combinations to support the growth of various *Campylobacter* spp. The relationship between broth, selective media and the bacteria was analysed using logistic generalised linear mixed models (GLMM), where the hierarchical structure of repeated samples for the same animal was modelled as a random effect.



The GLMM models showed a **statistically significant association between the used broth and the detection of *C. hyointestinalis*** (Table 2). For *C. jejuni*, statistically significant association was present only between direct culture and Preston broth.

Media	<i>C. jejuni</i>			<i>C. hyointestinalis</i>		
	OR	95% CI	P	OR	95% CI	P
Broth						
None	—	—	—	—	—	—
Preston	<b>8.52</b>	3.16, 22.9	<b>&lt;0.001</b>	<b>260</b>	50.7, 1,336	<b>&lt;0.001</b>
Bolton	2.42	0.99, 5.88	0.052	<b>7,264</b>	772, 68,384	<b>&lt;0.001</b>
Selective						
mCCDA	—	—	—	—	—	—
Preston	1.80	0.88, 3.70	0.11	1.21	0.60, 2.45	0.6

### Conclusions

- The use and selection of enrichment broth is associated with the detection of *C. hyointestinalis* from cattle faeces. Direct culture performs poorly in detecting *C. hyointestinalis*.
- As the standards favour thermotolerant *Campylobacter* spp., the prevalence of *C. hyointestinalis* in cattle may have been previously underestimated.



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