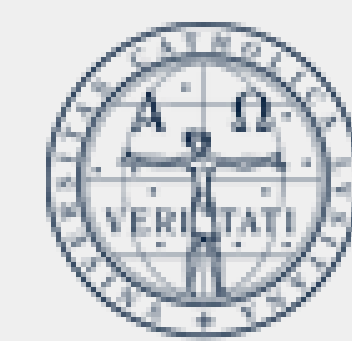


Prevalence of *Campylobacter* in chickens from different production systems

Santos-Ferreira, N. L.¹, Teixeira, P.¹

¹Universidade Católica Portuguesa, CBQF - Centro de Biotecnologia e Química Fina – Laboratório Associado, Escola Superior de Biotecnologia, Rua Diogo Botelho 1327, 4169-005 Porto, Portugal



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Introduction and Objective

Campylobacter is the major cause of gastroenteritis from bacterial origin, known as campylobacteriosis since 2005. It was responsible for 72.8% of the reported cases in 2017 in Europe. Poultry are the main reservoir of *Campylobacter* which makes the consumption of raw or undercooked chicken and ready-to-eat foods that have been in contact with raw chicken/contaminated surfaces the most common sources of infection. The thermophilic species *Campylobacter jejuni*, *Campylobacter coli* and *Campylobacter lari* are the main sources of human infection [1]. This study aimed to investigate the prevalence and level of contamination of *Campylobacter* in chickens from different production systems: commercial broiler, free range and backyard chickens, and identify the *Campylobacter* species present.

Methods

Chicken neck skin samples were collected between October 2018 and May 2019 from commercial broiler (n=10), free range (n=10) and backyard chicken (n=11). Samples were purchased in local supermarkets or provided by people who raise chickens at home. Microbiological analysis followed the international standard methods for *Campylobacter* spp.. Modified charcoal-cefoperazone-deoxycholate agar and CampyFood agar were used as selective media. Isolates were confirmed by biochemical tests and multiplex PCR [2].

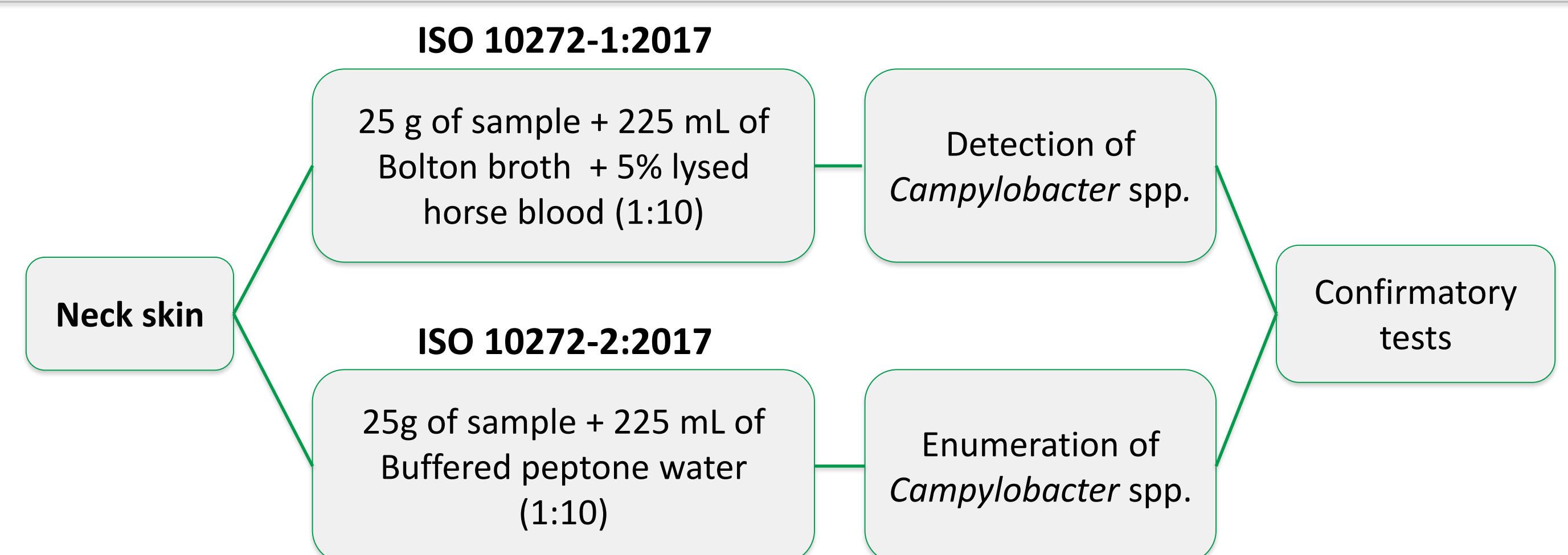


Figure 1 – Skin samples of (A) commercial broiler, (B) free range and (C) backyard chicken.

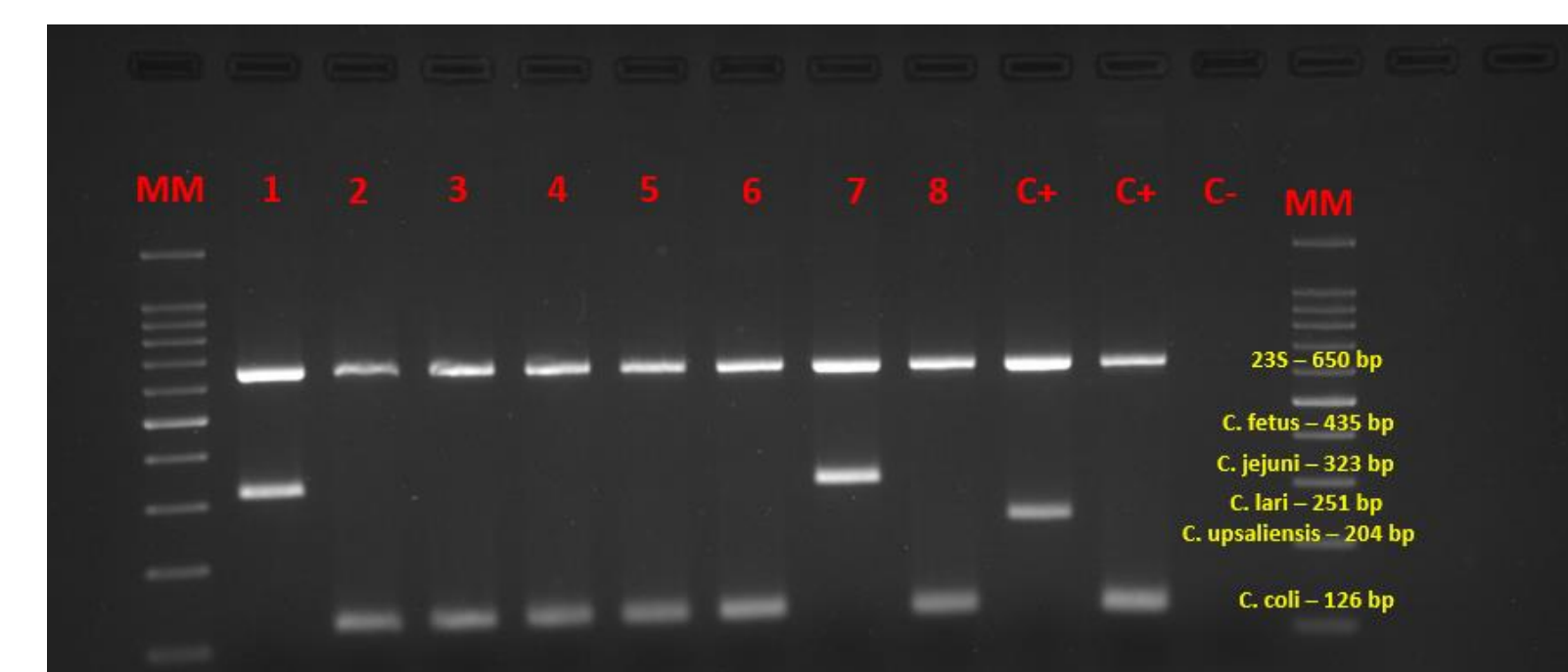


Figure 2 - Multiplex PCR for *Campylobacter* species confirmation. Lane 1 and 7 – *C. jejuni*; Lane 2 to 6 and 8 – *C. coli*.

Results

Results of *Campylobacter* prevalence and levels of contamination are presented in table 1. *Campylobacter* species detected in each group of samples are presented in figure 3.

Table 1 – Prevalence and levels (mean) of *Campylobacter* in the three groups of samples analysed.

	Prevalence (%)	Level of <i>Campylobacter</i> (CFU/g)
Commercial broiler	100 (10/10)	3.0×10^3 (1.0×10^2 - 1.0×10^4)
Free range	100 (10/10)	4.4×10^2 (1.0×10^2 - 1.0×10^3)
Backyard chicken	72.7 (8/11)	4.2×10^4 (1.0×10^1 - 2.5×10^5)

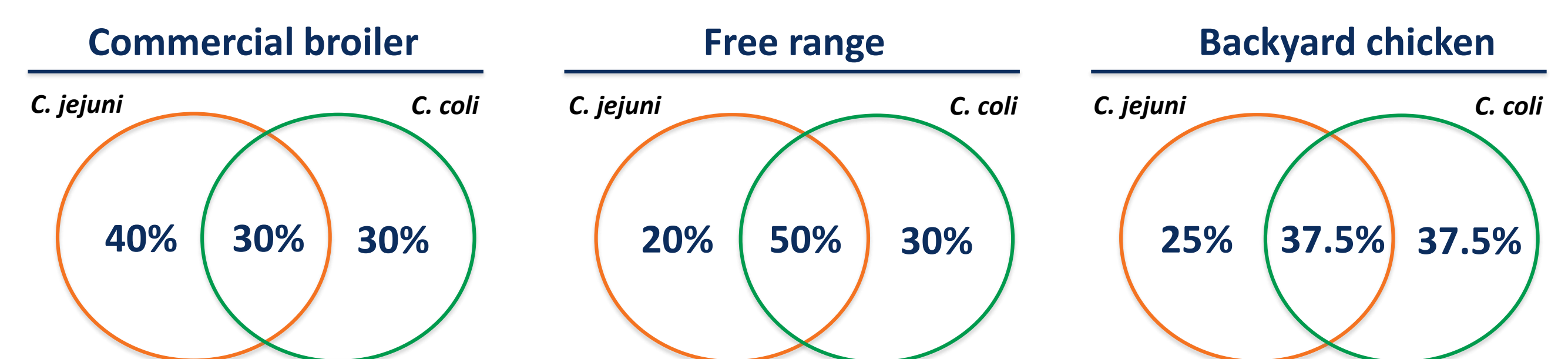


Figure 3 – Percentage of the *Campylobacter* positive samples contaminated only with *C. jejuni*, only with *C. coli* and with both species.

Conclusions

- An overall prevalence of 90.3 % of *Campylobacter* was obtained for the 31 samples tested;
- *C. jejuni* and *C. coli* were the only species of *Campylobacter* detected in all samples;
- All samples from commercial broiler and free range chickens were positive for *Campylobacter* (100% of prevalence);
- Free range chickens had the lowest levels of *Campylobacter*;
- Backyard chickens presented only 72.7 % of the samples positive for *Campylobacter* with an average of 4.2×10^4 CFU/g;
- Even though the prevalence of *Campylobacter* was lower for the backyard chicken samples this type of production presented the highest levels of contamination;
- Commercial broiler and backyard chicken presented, in average, levels of contamination above the limit set by the European legislation for process hygiene criteria (1.0×10^3 CFU/g), which presents a risk for *Campylobacter* foodborne illness.

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