

BRACHYSPIRA SPECIES ISOLATED FROM UK POULTRY SAMPLES

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Introduction and objectives

Avian intestinal spirochaetosis (AIS) is a disease of poultry resulting in 'wet droppings' due to increased faecal water content, wet litter and faecal staining of eggs. Delayed and/or reduced egg production is reported to be a consequence of the condition (2,6). AIS is caused by infection of the caeca and/or the colo-rectum by *Brachyspira* species. In Australian poultry production, *B.pilosicoli* and *B.intermedia* are reported to be the most common pathogenic species (4). Little is known about the prevalence or importance of *Brachyspira* species in British poultry farming and the aim of this paper is to present preliminary data of *Brachyspira* isolations from routine diagnostic specimens.

Materials and methods

Faecal samples from poultry with histories of 'wet droppings' were submitted from commercial farms over a wide geographical area of the UK for *Brachyspira* testing. The results span a period from October 2005 to March 2007. Submissions from individual farms ranged from a single sample of pooled faecal material, up to five samples of pooled faecal material. On receipt, each pooled sample was mixed to obtain a representative sub-sample. *Brachyspira* cultures were carried out as previously described (3,5), with plates incubated anaerobically at 42°C±1°C. Cultures that were positive for *Brachyspira* species were subcultured to purity, the degree of beta haemolysis recorded and biochemical testing performed (3).

Results

There were 102 submissions involving 273 samples; the majority (96 submissions) were from layers. Of the submissions from layer flocks, 24% yielded *B.intermedia*, 25% *B.pilosicoli*, 28% *B.innocens*, 4% *B.hyodysenteriae*, 6% 'atypical' *Brachyspira* species, 1% *B.alvinipulli* and 29% yielded no *Brachyspira* isolates (Table 1). The prevalence of organisms within samples were 16% *B.intermedia*, 14% *B.pilosicoli*, 14% *B.innocens*, 3.5% 'atypical' *Brachyspira* spp., 1% *B.hyodysenteriae* and 0.4% *B.alvinipulli*, while 54% were culture negative (Table 1). Results from broilers, turkeys and partridges were small. The results confirm that *B.intermedia* and *B.pilosicoli* are both prevalent in samples from layers with 'wet droppings'. A difference in distribution of the species was noted between caged and free-range birds for a subset of the samples, as reported in a separate abstract (1). Epidemiological differences between housing systems could be important in relation to the

Brachyspira species involved in AIS. *B.innocens* is considered to be non-pathogenic in birds. The isolations of *B.hyodysenteriae* were from flocks situated in fairly close proximity to pig units. The significance of *B.hyodysenteriae* in poultry is uncertain as information on pathological findings associated with infection is lacking. In all cases, it was the only *Brachyspira* isolate recovered from the submissions. *B.alvinipulli* was identified in one submission and is considered to be pathogenic in birds. 'Atypical' *Brachyspira* species were those that could not be identified by the existing criteria. Their significance is unknown

Table 1: Results of *Brachyspira* culture of faecal samples from layers with 'wet droppings'

Isolate	Submissions (n=96)		Samples (n=257)	
	No	%+ve	No	%+ve
Negative	30	29	134	54
<i>B.intermedia</i>	25	24	40	16
<i>B.pilosicoli</i>	26	25	35	14
<i>B.innocens</i>	29	28	35	14
<i>B.hyodysenteriae</i>	4	4	3	1
<i>B.alvinipulli</i>	1	1	1	0.4
'Atypical'	6	6	9	3.5

Conclusions

(i). *B.pilosicoli* and *B.intermedia* were isolated from faecal samples of layers with 'wet droppings' in 25% and 24% of submissions respectively

(ii) *B.hyodysenteriae* was isolated from four flocks situated in fairly close proximity to pig units.

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