Intestinal infection with different spirochete species in laying hens

Zarabi, M[1]; Jamshidi, A[2*], Khanzadi, S[2] and Razmyar, J[3]

[1]*Graduated from faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran*

[2]*Department of Food Hygiene, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran*

[3]*Department of Clinical Sciences, Faculty of Veterinary Medicine, Ferdowsi University of Mashhad, Mashhad, Iran*

Avian intestinal spirochetosis (AIS) is caused by spiral-shaped Gram-negative *Brachyspira* spp. in poultry and is known as a cause of diarrhea, low egg production and increased occurrence of dirty eggs in layer hens. In this study the presence of different species of *Brachyspira* was investigated in laying hens. A total of 100 cloacal swab samples were collected from 20 laying hen flocks in northeastern Iran. By culture and morphologic examination, 41 samples (41%) from 20 flocks were positive but by using genus–specific PCR only 37 (37%) samples were confirmed as *Brachyspira* spp. Using species-specific primers, single infection was identified in 18 cases associated with *B. pilosicoli* (48.6%) while single infection with *B. intermedia* was found in only two cases (5.4%). Simultaneous infection by *B. intermedia* and *B. murdochii* was detected in 3 cases (8.1%). *B. pilosicoli* was the most prevalent species in concurrent infections in 11 cases (29.7%). Finally, co-infection by *B. intermedia* and *B. innocens* was identified in 3 cases (8.1%). In simultaneous infections with pathogenic and non-pathogenic species the symptoms of intestinal spirochetosis were reduced, suggesting a competitive role in preventing and reducing the colonization of pathogenic species.

Keywords: Intestinal spirochetosis, *Brachyspira*, laying hen, PCR