Intestinal infection with different spirochete species in laying hens
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Avian intestinal spirocheta (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