



Evaluation of the anticoccidial effects of herbal extracts in experimentally induced *Eimeria tenella* infection in broiler chickens

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Objectives: Coccidiosis is one of the most important diseases of poultry worldwide that characterized by enteritis. Safe alternative anticoccidial drug to chemical feed additives are herbal extracts because they don't result in tissue residue and drug resistance. Therefore we have decided to study the effects of herbal extracts to control avian coccidiosis.

Materials & Methods: For this purpose 180 one-day-old broiler chickens were randomly divided into 9 equal groups. Each group had 2 replicates (10 birds/group). The experimental groups were designated as follows: 1) *Biarumbovei* 2) *Nectaroscordum tripedale* 3) *Dorema aucheri* 4) *Cichorium intybus* 5) *Prangos ferulaceae* 6) *Diclazuril* 7) *Artemisia absinthium* 8) Infected control 9) uninfected control. Administration of herbal extracts and supplementation of diclazuril began 2 days before challenge and lasted for the duration of the experiment. The chicks of all the groups except uninfected control group were inoculated orally with sporulated oocysts (3×10^3 oocysts of *E. tenella*) at 22 days of age. The criteria employed were: body weight, feed conversion ratio (FCR), blood in feces, survival rate, lesion scoring, number of oocyst output per gram feces (OPG) and development of histopathological lesions.

Results & Conclusions: *N. tripedale* and *diclazuril* showed better results in terms of growth performance, lesion score, extent of bloody diarrhea and oocyst count as compared with other herbal extracts. Based on histopathological examination intracellular stages of coccidian in mucosa and submucosa were observed in all treated groups. In addition, in group 1 purulent enteritis, coagulative necrosis and degeneration, crypt hyperplasia with oocysts of coccidia was also evident in the epithelium. In group 2 and 3 parasitic hemorrhagic fibrinopurulent enteritis were observed. In group 5 fibrinopurulent enteritis with villus atrophy were seen. In the group 6, lesions included intracellular stages of coccidia (oocyst and schizont) in mucosa and submucosa with infiltration of inflammatory cells. The severity of lesions was respectively related to the groups *D. aucheri*, *A. absinthium*, *B. bovei*, *P. ferulaceae*, *C. intybus*, *diclazuril* and *N. tripedale* in decreasing order.

In conclusion, the results of the present study showed that herbal extracts were effective against the *E. tenella*. In particular, *N. tripedale* found to be more potent on the basis of oocysts output and live body weight. *N. tripedale* has promising efficacy as an effective and safe alternative drug against coccidiosis.

Keywords: Coccidiosis, herbal extract, broiler chicken, histopathological examination

Molecular identification of genotype B, a new genotype of *Chlamydia philippsittaci* in an African grey parrot (*Psittacus erithacus*)

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Objectives: Avian chlamydia philippsittaciosis is caused by *Chlamydia philippsittaci* with the highest infection rates in parrots (Psittacidae) and pigeons (Columbiformes). This study was conducted to molecularly characterize chlamydia philippsittaciosis in an African grey parrot and determine its genotype.

Materials & Methods: A 2 year-old African grey parrot (*Psittacus erithacus*) was examined because of anorexia, depression, diarrhea, and mild dyspnea. After laboratory tests and radiology of the bird, swabs from choanal cleft and cloaca were collected. DNA extraction and *OmpA* gene-based diagnostic PCR, using CTU/CTL primers were performed. Finally sequence of the PCR product was compared with sequences obtained from GenBank.

Results & Conclusion: The established phylogenetic tree based on the genome fragment examined in this report and 12 reference genomes, revealed 100% identity of amplicon sequence with genotype B obtained from previous studies. To the best of our knowledge, this is the first report of genotype B identification from Iran. This study suggests the need for greater awareness of chlamydia philippsittaciosis in pet bird populations by avian clinicians in Iran.

Keywords: Avian *Chlamydia philippsittaciosis*, Psittacidae, Columbiformes, African grey parrot, *ompA* gene.