Coccidia (*Eimeria* spp.) in small intestine of Japanese quail (*Coturnix coturnix japonica*)

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Coccidiosis is one of the most important diseases of poultry world-wide. Most coccidia in poultry belong to the genus *Eimeria*. The *Eimeria* are highly host specific. We identified coccidia in small intestine of one case among the 960 quails during the acute oral toxicity and dietary toxicity test. No clinical signs were observed in male and female 6-week-old Japanese quails (*Coturnix coturnix japonica*) weighing 130-150 g. The brain, liver, kidney, thymus, lung, trachea, intestine, testis, and ovary were fixed in 10% neutral formalin. Macrogametes of *Eimeria* spp. were seen in small intestine of Japanese quail by H & E staining. Eosinophilic mucoprotein granules were observed in the macrogametes of *Eimeria* spp. Coccidia are an important consideration in using Japanese quail as a laboratory animal.

Key words: Coccidiosis, Japanese quail (*Coturnix coturnix japonica*), *Eimeria* spp.

The biology and taxonomy of coccidia were reviewed by Long (1) and Pellerdy (2). Although several genera of coccidia are known to infect some types of birds, most of them often encountered in poultry belong to the genus *Eimeria*. Species of *Eimeria* are frequently described from the morphology of the oocyst, a thick-walled zygote shed in fecal matter by the infected host. Oocysts are enclosed in a thick outer shell and consist of a single cell that begins the process of sporulation to yield the infective stage in about 48 hr. Species of coccidia are identified on the basis of 1) oocyst morphology, 2) host specificity, 3) immune specificity, 4) appearance and location of gross lesions within the natural host, and 5) length of the prepatent period (3). The host specificity of *Eimeria* in birds and mammals is very strict, so that parasites from different species of birds or animals can be considered different species even though they may have similar-appearing oocysts. Ruff et al. reported coccidia were recovered from a field outbreak in commercially raised Japanese quail from South Carolina. Then after propagation in unmedicated quail, the culture was identified as a mixture of approximately 65% *Eimeria azura*, 33% *E. tsunodai*, and 2% *E. taldykurganica*. Infection did not adversely affect body weights of adult quail and mortality was seen only with the mixed culture (100 and 8% in 3- and 17-day-old quail given 5 × 10(5) oocysts, respectively (4). *Eimeria tenella*, *E. lophorygis*, *E. crasti* sp. n., *E. oreorygis* sp. n., *E. okanananensin*, *E. crasti*, and *E. tahamensis* sp. n. were also reported in quails (5,6,7). We identified coccidia in small intestine of one case among the 960 quails during the acute oral toxicity and dietary toxicity test. Male and female 6-week-old Japanese quails (*Coturnix coturnix japonica*) weighing 130-150 g were obtained from a local supplier (Suwon-Ezo, Korea). The quails were kept at a room temperature of 22 ± 2°C and 55 ± 10% relative humidity. Air changes per hour were kept constant (15X). Lighting was 8 h: 16 h, light: dark. Light intensity in the cages was 300 lux. They received standard layer feed (Samyang, Korea) and tap water ad libitum. There were no clinical signs. When the acute and dietary toxicity tests were finished, the brain, liver,
Fig. 1. Macrogametes of *Eimeria spp.* in small intestine of Japanese quail (H&E); Bar=50 um.

kidney, thymus, lung, trachea, intestine, testis, and ovary were fixed in 10% neutral formalin at least 24 h, dehydrated in alcohol xylene series, and embedded in paraffin wax. From each block, 2 um-thick sections were prepared, and stained with hematoxylin and eosin (H & E) for histopathological examination. Macrogametes of *Eimeria spp.* were seen in small intestine of Japanese quail (Fig. 1). Eosinophilic mucoprotein granules were observed in the macrogametes of *Eimeria spp.* Coccidia are an important consideration in using Japanese quail as a laboratory animal.

**References**