Studies on Infectious Disease, Pathology, Clinical Workup and Basic Biology of Zoo Animals

（動物園動物の感染症、病理学、臨床処置および基礎生物学に関する研究）

An Abstract of Ph. D. Thesis

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The author has been working at Zoorasia since the opening preparation period in 1997. This thesis summarized the studies on the diseases and their pathology that the author had experienced in Zoorasia keeping animals so far.

In chapter two, the author described nontuberculous mycobacteriosis in northern carmine bee-eaters. Four norhtern carmine bee-eaters (*Merops nubicus*) kept in the same indoor exhibition died in a row. From sequencing analysis of 16SrRNA gene and *hsp*65 gene using DNA samples extracted from the livers and spleens of dead birds, it was revealed that the obtained base sequences of these house-keeping genes showed 100% homologies with *Mycobacterium genavense* which is a kind of non-tuberculous mycobacteria. As a result, it was concluded that the present serial mortalities were caused by endemic infection of *M. genavense*, non-tuberculous mycobacteria.

In chapter three, the author described the cases of neoplasms observed in the rearing animals of Zoorasia, from the opening period to 2017. Neoplastic conditions in zoo mammals have been recorded in total 45 animals of 24 species from 1999, the opening of Zoorasia, to 2017. The neoplastic conditions were the most frequently recorded in Carnivora (9.2%). In the present survey, squamous cell carcinoma of oral cavity was more common in nonhuman-primates (three cases) and Diprotodonia (two cases).

In chapter four, the author described immune-mediated disorder observed in spectacled bear. A 5-year-old female spectacled bear (Andean bear, *Tremarctos ornatus*) had pruritic eczema all over the body surface. Antihistamines had no effect for the symptoms. The bear was treated with prednisolone, and the symptoms were improved. This skin disease was considered atopic dermatitis because of effect of corticosteroid and disapperarance of clinical signs due to the change of living place. Recent publications regarding a specific dermatological condition in female spectacled bears have been proposing the name of novel immune- mediated skin disorder, Andean bear alopecia syndrome (ABAS). From the clinical features and blood biochemistry, it was suggested that the present case might be diagnosed as ABAS.

In chapter five, the author described cellular susceptibility of proboscis

monkey's lymphocytes to Epstein-Barr virus (EBV). Lymphocytes collected from peripheral blood of four proboscis monkeys reared at Zoorasia was infected with EBV in vitro. From expression of EBV related protein and presence of viral genome in the proliferating cells, it was confirmed that proboscis monkey's lymphocytes were susceptible to EBV.