BioOne COMPLETE

EIMERIA GOZAISHOENSIS N. SP. FROM THE FORMOSAN SEROW (CAPRICORNIS CRISPUS SWINHOEI)

Authors: Inoue, Isamu, and Imura, Mari

Source: Journal of Wildlife Diseases, 27(2) : 214-216

Published By: Wildlife Disease Association

URL: https://doi.org/10.7589/0090-3558-27.2.214

BioOne Complete (complete.BioOne.org) is a full-text database of 200 subscribed and open-access titles in the biological, ecological, and environmental sciences published by nonprofit societies, associations, museums, institutions, and presses.

Your use of this PDF, the BioOne Complete website, and all posted and associated content indicates your acceptance of BioOne's Terms of Use, available at www.bioone.org/terms-of-use.

Usage of BioOne Complete content is strictly limited to personal, educational, and non - commercial use. Commercial inquiries or rights and permissions requests should be directed to the individual publisher as copyright holder.

BioOne sees sustainable scholarly publishing as an inherently collaborative enterprise connecting authors, nonprofit publishers, academic institutions, research libraries, and research funders in the common goal of maximizing access to critical research.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 17 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

Journal of Wildlife Diseases, 27(2), 1991, pp. 214–216
© Wildlife Disease Association 1991

EIMERIA GOZAISHOENSIS N. SP. FROM THE FORMOSAN SEROW (*CAPRICORNIS CRISPUS SWINHOEI*)

Isamu Inoue and Mari Imura

Department of Medical Zoology, College of Agriculture and Veterinary Medicine, Nihon University, 1866 Kameino Fujisawa, Kanagawa 252 Japan

ABSTRACT: *Eimeria gozaishoensis* n. sp. was found in the Formosan serow (*Capricornis crispus swinhoei*). The oocysts were ovoid, 29.41 ± 0.58 × 20.77 ± 0.41 μm with a bilayered wall. A micropyle and micropylar cap were observed, but a polar granule and oocyst residuum were absent. Sporocysts were ovoid, 11.78 ± 0.30 × 7.60 ± 0.31 μm, with sporocyst residuum and Stieda body. The new species differs from other known species of the genus by the morphology of oocysts and that domestic goats apparently could not be infected. The sporulation time was 6 to 7 days.

Key words: Coccidia, *Eimeria gozaishoensis*, Apicomplexa, Formosan serow, *Capricornis crispus swinhoei*, new species description.

INTRODUCTION

Although a number of coccidia have been described from wild Caprinae (Galli-Valerio, 1924; Inoue, 1989; Machu'lskiĭ, 1947 cited in Pellérdy, 1965), none have been reported from the Formosan serow (*Capricornis crispus swinhoei*). This paper presents a description of the oocysts of a new *Eimeria* sp., designated as *E. gozaishoensis*) from the Formosan serow.

MATERIALS AND METHODS

Fecal samples were collected from five Formosan serows kept in the Gozaisho Alpine Zoo (Japan) during May 1986 to November 1987. Fecal samples were mixed with 2% potassium dichromate solution and a thin layer of the solution was placed inPetri dishes to sporulate at 25 C. Oocysts were concentrated by centrifugation and flotation in Sheather's sugar solution. One hundred oocysts were measured by bright-field microscopy using a calibrated ocular micrometer. Measurements are reported in micrometers (μm) as means with the range in parentheses.

Two 3-mo-old domestic goats were individually inoculated with 500 oocysts of *E. gozaishoensis*. The feces of the goats were examined for oocysts by Sheather's sugar flotation method for 30 days after inoculation.

RESULTS

Oocysts were recovered from the feces of 1 of 5 *C. crispus swinhoei*. These were found to represent a previously undescribed new species of the genus *Eimeria*.

Eimeria gozaishoensis n. sp.

(Figs. 1, 2)

Description: Oocysts ovoid, 29.41 ± 0.58 × 20.77 ± 0.41 μm, with a smooth, bilayered wall, shope index 1:4. Outer wall blue, inner layer dark violet. Micropyle and distinct micropylar cap present. Polar granule and oocyst residuum absent. Sporocysts ovoid, 11.78 ± 0.30 × 7.60 ± 0.31 μm, with a smooth, single-layered wall. Sporocyst residuum, Stieda body and refractile bodies present. Sporulation time 6 to 7 days.

Host: Formoson serow (*Capricornis crispus swinhoei*) small intestine.

Locality: Gozaisho Alpine Zoo, Japan.

Etymology: The species name is derived from the host locality where the oocysts were collected.

DISCUSSION

Eimeria spp. reported from hosts related to the Formosan serow include *E. sajanica* and *E. saiga* from the saiga (*Saiga tatarica*) (Machul'skiĭ, 1947 cited in Pellérdy, 1965; Svanbaev, 1958), *E. rupicaprae, E. riedmuelleri, E. yakimoffmatschoulskyi, E. alpina* and *E. suppereri* from the chamois (*Rupicapra rupicapra*) (Galli-Valerio, 1924; Kutzer, 1964; Supperer and Kutzer, 1961; Yakimoff and Matschoulsky, 1940), *E. oreamni, E. montanaensis* and *E. ernsti* from the Rocky Mountain goat (*Oreamnos americanus*) (Shah and Levine, 1964; Todd and O'Gara, 1968), and *E. capricornis, E. nihonis, E. naganoensis* and *E. kamoshika* from the Japanese serow

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 17 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

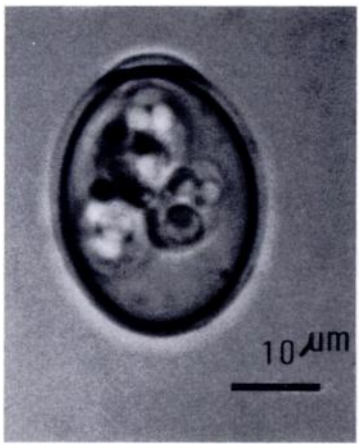

FIGURE 1. Photograph of *Eimeria gozaishoensis* n. sp.

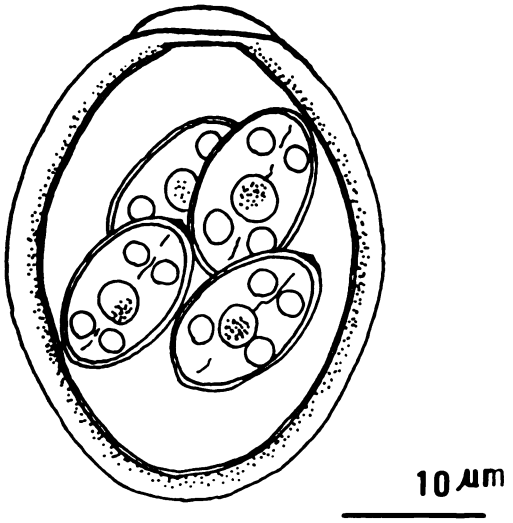

FIGURE 2. Line drawing of *Eimeria gozaishoensis* n. sp.

(*Capricornis crispus*) (Inoue, 1989). The new species of *Eimeria* from the Formosan serow can be distinguished from all the these species by a number of characteristics.

The oocyst of *E. sajanica*, *E. alpina*, and *E. montanaensis* are considerably smaller in size, whereas oocysts of *E. saiga*, *E. suppereri*, and *E. capricornis* are larger. The oocysts of *E. rupicaprae* lack a micropylar cap, whereas the oocysts of *E. riedmuelleri* lack a micropyle, sporocyst residuum and Stieda body. The oocysts of *E. yakimoff-matschoulski* are similar in size but have a micropylar cap that is easily lost from the oocyst. Ryšavý (1954), cited in Pellérdy, 1965) reported four species (*E. arloingi*, *E. crandallis*, *E. ninakohlyakimovae* and *E. parva*) from the chamois. The natural host of these four species are domestic goats or domestic sheep. According to Levine and Ivens (1970), none of these species has been reported subsequently. As there have been no attempts to conduct cross-transmission experiments since Rýsavý (1954), it is unclear whether these are distinct species. *Eimeria longispora* was isolated from the chamois by Rudovsky (1922), but Pellérdy (1965) mentioned that no original description had been published on this species. Consequently, it is considered that the name *E. longispora* will be *nomina nudum*. Oocysts of *E. oreamni* from the Rocky Mountain goat are more piriform in shape, the oocysts of *E. ernsti* possess a polar granule, and *E. nihonis* lack a micropylar cap. Oocysts of *E. naganoensis* and *E. kamoshika* also lack a micropylar cap. In addition, oocysts of the latter species also are more elongate.

ACKNOWLEDGMENTS

The authors wish to thank Director Y. Mori of Gozaisho Alpine Zoo for valuable advice and Mrs. M. Fujita for technical assistance.

LITERATURE CITED

GALLI-VALERIO, B. 1924. Parasitologische Untersuchungen und Beiträge zur parastologischen Technik. Zentralbatt fuer Bakteriologie Parasitenkunde Infektionskrankheiten und Hygiene Abteilung I Originale 91: 120–125.

INOUE, I. 1989. *Eimeria capricornis* n. sp., *E. nihonis* n.sp., *E. naganoensis* n. sp., and *E. kamoshika* n. sp. (Protozoa: Eimeriidae) from the japanese serow, *Capricornis crispus*. The Japanese Journal of Veterinary Science 51: 163–168.

KUTZER, E. 1964. *Eimeria suppereri* spec. nov., eine neue kokzidienart aus der Gemse (*Rupicapra rupicapra*). Archiv fuer Protistenkunde 107: 373–376.

LEVINE, N. D., AND V. IVENS. 1970. The Coccidian Parasites (Protozoa, Sporozoa) of ruminants. University of Ilinois Press, Magazine Number 44, Urbana, Illinois, 278 pp.

PELLÉRDY, L. P. 1965. Coccidia and Coccidiosis. Akademiai Kiadó Budapest, Budapest, Hungary SSR, 572 pp.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 17 Apr 2024
Terms of Use: https://bioone.org/terms-of-use

RUDOVSKY, F. 1922. Aus dem Gebiet der Kokzidienkunde, Wiener tierärztliche Monatsschrift 9: 91–93.

SHAH, H. L., AND N. D. LEVINE. 1964. *Eimeria oreamni* n. sp. (Protozoa: Eimeriidae) from the Rocky Mountain goat *Oreamnos americanus*. The Journal of Parasitology 50: 634–635.

SUPPERER, R., AND E. KUTZER 1961. Die Kokzidien von Reh, Hirsch und Gemse. Jubilaums-Jahrbuch 1960/61: 128–136.

SVANBAEV, S. K. 1958. Fauna koktsidiĭ dikikh kopytnykh zhivotnykh Kazakhstana. Trudy Instituta Zoologii Akademii Nauk Kazakhskoi SSR 9: 187–197.

TODD, K. S., AND B. W. O'GARA. 1968. *Eimeria montanaensis* n. sp. and *E. ernsti* n. sp. (Protozoa, Eimeriidae) from the Rocky Mountain goat *Oreamnos americanus*. The Journal of Protozoology 15: 808–810.

YAKIMOFF, W. L., AND S. N. MATSCHOULSKY. 1940. Die Kokzidien der Gemse (*Capella* s. *Rupicapra rupicapra*). Schwizer Archiv fur Tierheikunde 82: 16–18.

Received for publication 12 September 1989.

Downloaded From: https://bioone.org/journals/Journal-of-Wildlife-Diseases on 17 Apr 2024
Terms of Use: https://bioone.org/terms-of-use