

Eimeria Dammahensis sp. n. (Eimeriidae; Apicomplexa) from the Scimitar-Horned Oryx, *Oryx Dammah*

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Abstract. Oocysts of *Eimeria dammahensis* sp. n. are described from the feces of the scimitar-horned oryx, *Oryx dammah* (Cretzschmar 1826), from Riyadh Zoological garden, Saudi Arabia. Sporulated oocysts were subspherical in shape measuring 23.4 x 20.1 (17.8-25.0x16.4-23.1) μm , with bilayered smooth wall. Micropyle is present, and covered by a dome-shaped cap. Oocyst residuum is absent, but small polar granules are present. Sporocysts are elongate-ovoid, reaching 11.4x6.0 (10.0-12.9x4.7-7.0) μm with Stieda body and sporocyst residuum. Sporozoites are elongate-club shaped, each with large and small refractile body.

Key Words: Oocysts, *Eimeria*, *Coccidia*, *Oryx dammah*.

Introduction

Coccidial infection is common in Arabian oryx (Kasim and Al-Shawa 1988) and in gazelle captured in Riyadh city public Zoo (Kasim *et al.* 1991), and also in idmii gazelle, of the King Khalid wildlife research center in Thumamah, Riyadh province (Mohammed and Hussein, 1992). Although several species of *Eimeria* have been described from the antelope family Bovidae (Levine and Ivens 1986), only one species of *Eimeria* has been reported from the members of the genus *Oryx*; namely *E. saudiensis* from the Arabian oryx, *Oryx leucoryx*. To the best of our knowledge no *Eimeria* species has been described from *Oryx dammah*, Cretzschmar, 1826.

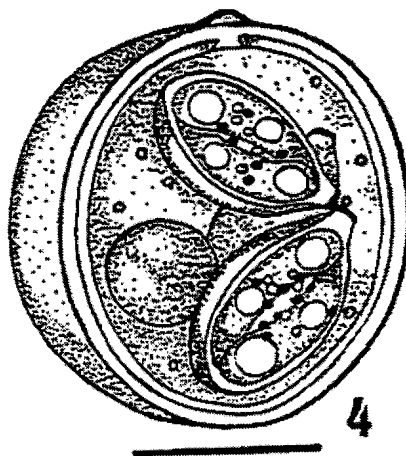
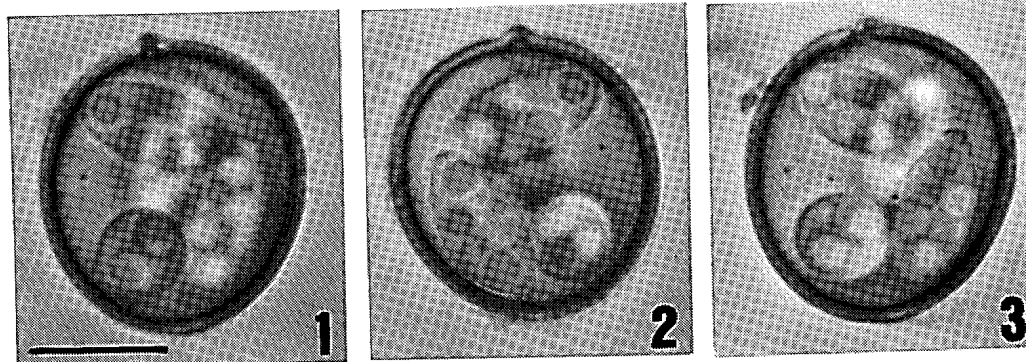
In this study we report a new species of *Eimeria* from *O. dammah*.

Materials and Methods

Freshly passed fecal samples from ten adult scimitar-horned oryx, *Oryx dammah*, were collected separately during January 2000. Collected samples were directly transported to the parasitology Laboratory at the Zoology Department, College of Science, King Saud University. Routine fecal examination using Sheather's sugar flotation (Levine 1973) was performed on each sample. Oocysts in positive samples were collected, concentrated and incubated in a thin layer of 2% (w/v) aqueous potassium dichromate solution at 26 ± 2 °C and examined periodically to determine the sporulation time. Fifty sporulated oocysts and fifty sporocysts from each sample were examined using a photomicroscope fitted with a 100x apochromatic oil immersion objective and a 10x ocular micrometer.

Table 1. Comparative data of *Eimeria* species from genus *Oryx*.

| Original structure | <i>E. dammahensis</i> | <i>E. saudiensis</i> |
|--------------------|--------------------------------------|--------------------------------------|
| Host | <i>Oryx dammah</i> | <i>Oryx leucoryx</i> |
| Oocyst | | |
| Shape | Subspherical | ellipsoidal or slightly ovoid |
| size (µm) | 23.4 X 20.1 (17.8-25X16.4-23.1) | 31.2 X 24.5 (24.3-36.5 X 20-27.6) |
| Wall | Smooth | finely pitted |
| micropyle | Present | Present |
| micropylar cap | 3 (2.5-3.3) wide 1 (0.8-1.3) high | 6 (4-8) wide 1.6 (1-3.5) high |
| polar granule | present | Present |
| sporocyst shape | elongate-ovoid | elongate-ovoid |
| size (µm) | 11.4 X 6.0 (10-12.9 X 4.7-7) | 14.3 X 7.2 11.5-18.5 X 6-9) |



Eimeria dammahensis sp. n. (Figs. 1-4).

Characteristics of oocysts, measurements and the morphology of sporocysts were detected after crushing the oocysts by pressure on the coverslip. Diagrammatic representation was made with the aid of camera lucida. All measurements are in micrometers (μm) with the mean followed by the range in parenthesis.

Results

During a survey of the parasitic fauna of Rivadh city public Zoo, ten scimitar-horned oryx, *Oryx dammah* were examined for coccidian infection, four of which were found to be positive for an undescribed species. The present study describes the morphological characteristics of this new species of *Eimeria*.

Eimeria dammahensis sp.n. (Figs. 1-4)

Description:

Sporulated oocysts were subspherical in shape with smooth surface, 50 oocysts from four infected *Oryx* measured $23.4 \times 20.1 \mu\text{m}$ (17.8-25.0 \times 16.4-23.1) with shape index (length/width ratio) reaching 1.18(1.04-1.41). Oocysts wall was 1.6 (1.3-1.8) thick and composed of two layers of approximately equal thickness, an outer light yellow layer and an inner brownish one, with small micropyle covered by dome-shaped micropylar cap of $3.0 \mu\text{m}$ (2.5-3.3) wide and $1.0 \mu\text{m}$ (0.8-1.3) high. Oocyst residuum was absent but several tiny polar bodies were present. Elongate-ovoid sporocysts measuring $11.4 \times 6.0 \mu\text{m}$ (10.0-12.9 \times 4.7-7.0), with length/width ratio 1.86 μm (1.57-2.12). Stieda body was present, but sub-and parastieda bodies were absent; sporocyst residuum was present, in form of small scattered granules. Sporozoites were elongate-club shaped, lying head to tail in the sporocysts, each

with a small anterior refractile body of $1.6 \mu\text{m}$ (1.3-1.8) in diameter and large posterior one of $2.0 \mu\text{m}$ (1.4-2.2) in diameter.

Taxonomic summary

Type host: Scimitar-horned oryx, *Oryx dammah*, Cretzschmar, 1826.

Type locality: Riyadh Zoological garden.

Prevalence: Found in four out of ten (40%) of *O. dammah*.

Site of infection: Unknown, oocysts recovered from feces.

Sporulation time: 3-4 days at $26 \pm 2^\circ\text{C}$ in 2% potassium dichromate.

Etymology: The specific name *dammahensis* is derived from the species name of the host.

Type specimens: Oocysts in 10% formalin and a phototype are deposited in the Parasitological Collection, Zoology department, College of Science, King Saud University, Riyadh, both as KSUC-110.

Discussion

However several species of *Eimeria* have been described previously from antelopes Family Bovidae (Levine and Ivens, 1986 and Mohammed, and Hussein, 1992), only one species of *Eimeria*, *E. saudiensis* (Kasim and Al-Shawa 1988) has been described from the members of the genus *Oryx*, none has been described from *Oryx dammah*. *Eimeria dammahensis* sp.n. can be easily distinguished from *E. saudiensis* in the shape of oocysts; *E. dammahensis* is subspherical, whereas *E. saudiensis* has ellipsoidal or slightly ovoidal oocyst. *E. dammahensis* has

smooth double-layered wall, whereas the outer layer of *E. saudiensis* is finely pitted (Kasim and Al-Shawa, 1988). Moreover, *E. dammahensis* differs from *E. saudiensis* in having much smaller oocysts, sporocysts and micropylar cap (Table 1). *E. dammahensis* is distinguished from those eimerian species from antelopes which lack the micropylar cap. The remaining eimerian species that possess micropylar cap are *E. tatarica* (Musaev, 1970) from the saiga, *Saiga tatarica*; *E. mrigai* (Pande, Chauhan, Bhatia and Arora, 1972) from the black buck, *Antelope cervicapra*; *E. tekenovi* (Svanbaev 1979) from the saiga, *Saiga tatarica* and *E. idmii* (Mohammed and Hussein 1992) from the Arabian mountain gazelle, *Gazella gazella*. *E. dammahensis* can be easily distinguished from all these four *Eimeria* species in having much smaller oocysts and sporocysts and in the shape of oocysts. *E. dammahensis* has subspherical oocysts rather than ellipsoidal or ovoidal oocysts reported from those four species. Moreover, *E. dammahensis* differs from *E. tatarica* and *E. tekenovi* in having polar granules and Stieda bodies and from *E. idmii* and *E. mrigai* in having much smaller micropyle and micropylar cap. These differences in structural features and host species suggest that *E. dammahensis* sp. n. is a distinct and hitherto undescribed species.

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وصف نوع جديد من الأميريا التي تصيب المها (الوضيحي) الأفريقي
Oryx dammah.

محمد بن صالح اليوسف وياسر بن رجب الشوا

قسم علم الحيوان - كلية العلوم - جامعة الملك سعود
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ملخص البحث

تم في هذا البحث دراسة تواجد ووصف نوع جديد من الأميريا وهو *Eimeria dammahensis* لأول مرة في حيوان المها الأفريقي الموجود بحديقة الحيوان بمدينة الرياض وقد تم التعرف على هذا النوع من الأميريا بناء على شكل وقياسات كل من الحويصلات والأكياس البوغية.