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ON SOME COCCIDIA OF *Cephalophus* spp. IN ZAIRE

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Abstract: Three species of coccidia found in forest duikers *(Cephalophus)* in the forest of Ituri (Zaïre) are described. They do not appear to be identical with any of the coccidia already described in African ruminants and seem to represent new species for which the following names are proposed: *Eimeria cephalophi* (found in *C. monticola*), *E. iturina* (found in *C. monticola*), and *E. turnbulli* (found in *C. dorsalis, C. monticola* and *C. nigrifrons*). In addition this would be the first report of coccidia in the genus *Cephalophus.*

INTRODUCTION AND METHODS

Our investigations were carried out on samples of faeces from seven forest duikers *(Cephalophus)* of the following species: *Cephalophus dorsalis* Gray (1 subject), *C. leucogaster* Gray (1 subject), *C. monticola Thurnberg* (4 subjects) and *C. nigrifrons* Gray (1 subject) captured by Bambuti Pigmies in the territories of the hunting station of Epulu in the Forest of Ituri. The collection, shipping and examination of the samples were performed according to the techniques already described.[2]

RESULTS

The coprological examinations showed that one faecal sample from *C. dorsalis* was positive for *E. turnbulli,* one sample from *C. leucogaster* was negative; that three of four samples from *C. monticola* were negative and one sample positive for *E. cephalophi, E. iturina* and *E. turnbulli;* and, finally, that one sample from *C. nigrifrons* was positive for *E. turnbulli.*

We were not able to calculate the exact sporulation time of the oocysts because when the samples arrived at the laboratory, 10 days after collection, many oocysts had already sporulated.

Description of the Coccidia

E. cephalophi (Fig. 1)

Oocysts ellipsoidal ovoidal; wall about 1 μ thick, smooth and yellowish, consisting of only one layer; micropyle visible as a clearer zone; cap and polar granule absent. The dimensions of 23 oocysts are (mean, min. and max., Standard Deviation and Standard Error):

length 22.2 (20.2-25.2) μ; S.D. 1.20; S.E. 0.25

width 15.6 (13.4-16.8) μ; S.D. 0.83; S.E. 0.17

length/width ratio 1.42 (1.31-1.62); S.D. 0.08; S.E. 0.01

Sporocysts elliptical, measuring 11.8 x 5.1 μ; Stieda body and oocyst residuum not visible; sporozoites comma-shaped with sporocyst residuum present in the form of a few granules arranged along the division line of the sporozoites; in some cases small refractile granules were detectable inside the sporocysts.

E. iturina (Fig. 2)

Oocysts elliptical; wall about 2 μ thick, consisting of two layers. By exerting pressure on the coverslip it is possible, though with some difficulty, to break the outer layer and separate it from the rest

* The name of this last species was chosen as an expression of friendship to the Scotch anthropologist Colin Turnbull, who offered his precious help during our research in Ituri.

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of the oocyst. The outer layer, which is rough and brown in colour, becomes slender near the anterior pole until it disappears; the inner one, which is smooth and colourless, has no micropyle; cap and polar granule absent. The dimensions of nine oocysts are:

length 23.2 (19.0-26.3) μ; S.D. 3.00; S.E. 1.00

width 18.3 (15.7-21.3) μ; S.D. 1.97; S.E. 0.65

length/width ratio 1.26 (1.20-1.35); S.D. 0.06; S.E. 0.02

Sporocysts elliptical, measuring 13.8 x 6.8 μ; Stieda body evident; oocyst residuum not visible; sporozoites comma-shaped with sporocyst residuum consisting of a compact heap of refractile granules. Inside the sporozoites vacuolar formations are generally visible.

Note: E. iturina resembles *E. turnbulli*: the difference will be discussed under the latter.

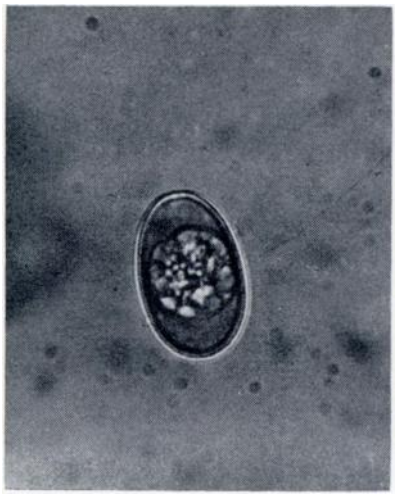


Fig. 1a

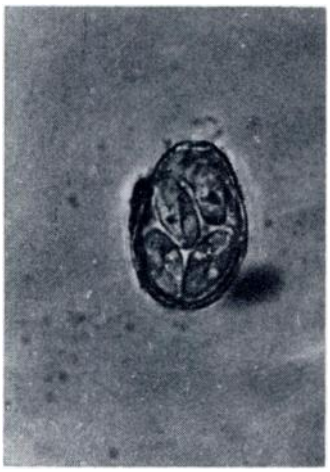


Fig. 1b



Fig. 1c

FIGURE. 1. **E. cephalophi** (x 1,000):

a) unsporulated oocyst

b) sporulated oocyst

c) schematic drawing of sporulated oocyst

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Fig. 2a

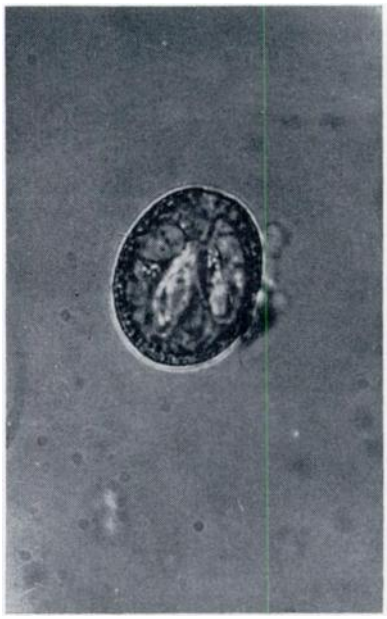


Fig. 2b

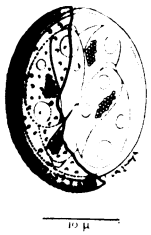


Fig. 2c

FIGURE 2. **E. iturina** (x 1,000):

a) unsporulated oocyst

b) sporulated oocyst

c) schematic drawing of sporulated oocyst

E. turnbulli (Fig. 3)

Oocysts ovoidal. The wall is about 2 μ thick and consists of two layers; the outer layer, which is rough and brown, is easily detached by pressure on the coverslip from the inner one, which is smooth and colourless. The external layer shows a round opening at its anterior pole. The inner layer has no micropyle; cap and polar granule absent.

The dimensions of 52 oocysts are:

length 32.4 (23.5-38.1) μ; S.D. 2.54; S.E. 0.35

width 23.1 (19.6-27.4) μ; S.D. 1.78; S.E. 0.24

length/width ratio 1.40 (1.23-1.57); S.D. 0.07; S.E. 0.00

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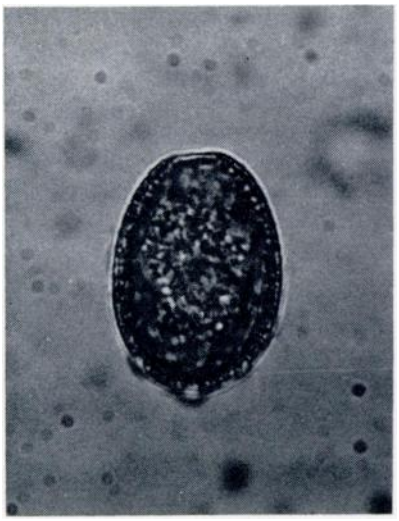


Fig. 3a

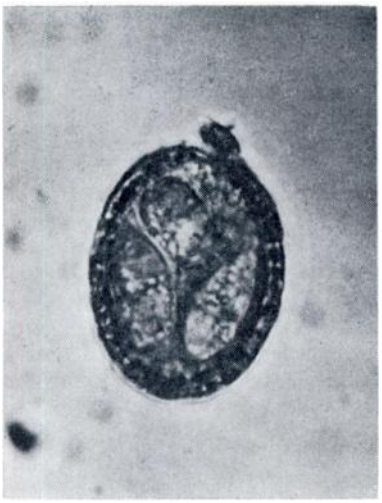


Fig. 3b



Fig. 3c



Fig. 3d

FIGURE 3. **E. turnbulli** (x 1,000):

a) unsporulated oocyst

b) sporulated oocyst

c) sporulated oocyst without the external layer of the wall

d) schematic drawing of sporulated oocyst

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In mature oocysts the details of the internal morphology become more easily observed by breaking and removal of the external layer of the wall. Sporocysts ovoidal elongate, measuring 16.2 x 6.2 μ; Stieda body present, though not always readily visible; oocyst residuum not visible; sporozoites comma-shaped with sporocyst residuum consisting of several refractile and generally scattered granules. In the sporozoites there are generally seen two or more light-coloured homogenous vacuoles.

Note: E. turnbulli resembles *E. iturina,* but differs from it in the dimensions of the oocysts and sporocysts and because the external layer of its wall can be very easily broken. The statistical analysis of the differences in the dimensions of the oocysts of the two above species proved significant for length, width and length/width ratio (Student's T = 1 percent).

CONCLUSIONS

Three new species of coccidia are described: *Eimeria cephalophi* found in *Cephalophus monticola, E. iturina* found in *C. monticola* and *E. turnbulli** found in *C. dorsalis, C. monticola* and *C. nigrifrons.*

A comparative survey of the three *Eimeria* spp. shows that our species are not identical with any other coccidia reported in wild and domestic African ruminants.[1,2]

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