Detection of *Balantidium coli* from Evacuated Feces in Cynomolgus Monkeys (*Macaca fascicularis*)

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It is well known that *Balantidium coli* is widely distributed in various animals including several nonhuman primates, such as the rhesus monkey, cynomolgus monkey, spider monkey, howler monkey, capuchin, baboon, orangutan, chimpanzee and gorilla [1]. However, there are few informations on the infective rate of *B. coli* in the large established monkey colony in Japan.

The present paper deals with the detection of *B. coli* in the cynomolgus monkeys maintained in the Tsukuba Primate Center for Medical Science (TPC). Some of them were captured in Southeast Asia and kept in TPC, and the others were bred in TPC. Each monkey was kept in an individual cage at the rearing facility of TPC. The maintenance system of breeding, dietary and other environmental conditions was the same as widely described [4]. During the period from August to September, 1989, fecal samples were collected from the 155 cynomolgus monkeys. For detection of *B. coli*, 3 g of the freshly evacuated feces was mixed with 6 ml of methylgreen-formalin-saline (MFS) solution to fix and stain balantidial cysts [5]. The suspension was filtrated through a double-folded sheet of muslin, and kept at room temperature until examination. *B. coli* was identified in conformity to various investigators [1, 6]. Counting and measurement of *B. coli* cysts were performed by means of a plankton-counter glass slide and a micrometer, respectively.

By the fecal examination, cysts were detected from 14 of 155 (9.0%) cynomolgus monkeys. The cysts detected were ovoid or round in shape, and the measurement of 20 cysts was $54.1 \pm 11.7 \times 68.8 \pm 14.2 \mu\text{m}$ on average (Fig. 1). The present measurement of *B. coli* cysts was similar to that described by many authors [1, 6]. Table 1 shows sex, age and origin of the *B. coli* cysts-positive monkeys, and the number of cysts per gram of feces (CPG) of respective monkeys. The average value of CPG was 68.6. No trophozoites were

detected in the evacuated feces of all the cynomolgus monkeys examined. The clinical manifestations, such as diarrhea and bloody mucous stool were not observed in the monkeys examined.

A high rate of *B. coli* infection has been reported in rhesus monkey (87%) and chimpanzee (84%) in a wild monkey colony [1]. However, the positive rate found in the present cynomolgus monkeys was very low. Although balantidia are commonly detected in the caecum and colon of various animals [1], Habermann and Williams [3] found no balantidial infection by microscopic examination of the large intestine from 60 cynomolgus monkeys. These reports suggest that the susceptibility of cynomolgus monkeys to *B. coli* infection is lower than that of other nonhuman primates. Gisler *et al.* [2] surveyed *B. coli* infection in a large established rhesus monkey colony, and reported a low rate of *B. coli* infection. It is considered that the infective rate of monkeys bred as experimental animals is lower than that of wild ones. A suggestible reason for this is that *B. coli* cysts have less chance to spread in an established colony than in wild one, because monkeys in the former colony are kept individually in cages. Nevertheless, the *B. coli* positive monkeys can play as asymptomatic carriers of even if their

Fig. 1. A cyst detected in the feces of cynomolgus monkeys. $\times 750$.

Table 1. *Balantidium coli* positive cynomolgus monkeys and the number of cysts in respective hosts

Animal No.	Sex ^{a)}	Age (years)	Origin ^{b)}	Number of cysts (/g feces)
1	F	9	B	60
2	F	8	B	150
3	F	8	B	120
4	F	8	B	60
5	F	8	B	30
6	M	1	B	30
7	F	ND ^{c)}	C	60
8	F	ND	C	60
9	F	ND	C	60
10	F	ND	C	30
11	F	ND	C	30
12	ND	ND	ND	150
13	ND	ND	ND	90
14	ND	ND	ND	30

a) F; female, M; male.

b) B; bred in the Tsukuba Primate Center for Medical Science, C; captured in the Southeast Asia.

c) Not defined.

positive rate is low. Therefore, the control of environmental conditions such as the use of clean individual cages is important to prevent the *B. coli* infection.

Although the female monkeys showed a tendency to have a higher incidence of this protozoan infection than the males, further investigation would be needed to elucidate the presence of the sex-dependent susceptibility.

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REFERENCES

1. Flynn, R. J. 1973. Parasites of Laboratory Animals, Iowa State Univ. Press, Ames, Iowa.
2. Gisler, D. B., Benson, R. E., and Young, R. J. 1960. *Ann. N. Y. Acad. Sci.* 85: 758-768.
3. Habermann, R. T. and Williams, F. P., Jr. 1934. *Am. J. Vet. Res.* 18: 419-426.
4. Honjo, S. 1985. *J. Med. Primatol.* 14: 75-89.
5. Ogimoto, K. and Imai, S. 1981. Atlas of Rumen Microbiology, Japan Scientific Societies Press, Tokyo.
6. Levine, N. D. 1973. *In: Protozoan Parasites of Domestic Animals and of Man*, 2nd ed., Burgess Publ. Co., Minneapolis.

要 約

カニクイザル糞便中の大腸バランチジウムの検出(短報): 中内 潔・中島弘美・榊原一兵¹⁾(茨城県県南食肉衛生検査所, ¹⁾国立予防衛生研究所筑波医学実験用霊長類センター)——国立予防衛生研究所筑波医学実験用霊長類センターのカニクイザル155頭について糞便中に排出される大腸バランチジウムを調査したところ, 14頭(9.0%)からシストが検出された。検出されたシストは大きさが平均 $54.1 \times 68.8 \mu\text{m}$ であった。