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***SARCOCYSTIS CLETHRIONOMYSI* N. SP. FROM
CLETHRIONOMYS RUFOCANUS
BEDFORDIAE THOMAS**

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Protozoan parasites belonging to the genus *Sarcocystis* show generally a striking host-specificity; as a rule, different *Sarcocystis* species are found according to difference of species of host animals. Consequently, a large number of species of *Sarcocystis* has been reported up to this time. It seems, however, that knowledge pertaining to the *Sarcocystis* is still inadequate especially in the field of the life cycle and classification, so there remain many problems to be clarified or discussed. Even in the text books, some authors have a tendency to consider what are actually various species as one single species. It can be said that additional knowledge is needed for a clearer understanding of the genus *Sarcocystis*. Then, various host animals should be painstakingly investigated and as many data as possible in respect of the parasite should be collected.

The present authors detected a species of *Sarcocystis* in skeletal muscles of *Clethrionomys rufocanus bedfordiae* THOMAS, a species of vole. A vole captured at Takikawa, Hokkaido was autopsied in June, 1957 and numerous whitish cysts of *Sarcocystis* were observed. Whole striated muscles except the myocardium harbored the cysts; muscle tissue looked grayish white; the axis of cyst was laid in parallel with the direction of muscle fibers. In March, 1959, 46 voles of the same kind obtained at Nopporo near Sapporo were also examined, and in 6 animals the existence was proved of *Sarcocystis* with the same morphological characteristics as were found in the Takikawa animal. The tissue materials were investigated chiefly by hematoxylin-eosin staining of formalin-fixed and paraffin-embedded sections. No tissue reactions against the parasite were recognizable in the host tissue by histopathological examination.

This *Sarcocystis* is characterized by small MIESCHER's tubes and minute RAINEY's corpuscles. No characters could be observed to serve to identify this species with other known ones. The authors, therefore, describe the parasite as a new species proposing the name *Sarcocystis clethrionomysi*.

***SARCOCYSTIS CLETHRIONOMYSI* N. SP.**

Morphology Cyst, MIESCHER's tube, elongated fusiform with somewhat

rounded ends, size $0.6\sim 1.5 \times 0.15\sim 0.25$ mm. Cyst membrane $3\sim 7\ \mu$ in thickness, homogeneous without any striations by hematoxylin-eosin stain. Cyst is divided by delicate trabeculae into chambers of $30\sim 50\ \mu$ size. Numerous spores, RAINEY'S corpuscles, within chamber. Chambers in central portion of cyst usually contain less spores than marginal portion. Spore ellipsoid or ovoid shape, some spores with slight unilateral inflation, size $4\sim 6 \times 2\sim 3\ \mu$, cytoplasm nearly transparent and poor in granular substances. Nucleus of spore is eccentric toward one end, $1.5\sim 2\ \mu$ in diameter and rich in chromatin substance.

Habitat All striated muscles except myocardium.

Host *Clethrionomys rufocanus bedfordiae* THOMAS.

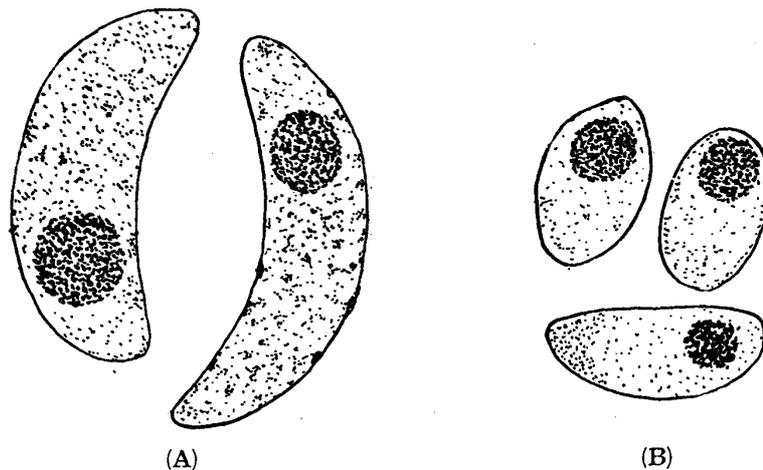
Localities Takikawa and Nopporo, Hokkaido, Japan.

Types In the collection of the Department of Parasitology, Faculty of Veterinary Medicine, Hokkaido University.

DISCUSSION

There has been no species of *Sarcocystis* reported from the vole of genus *Clethrionomys* up to this time. *Sarcocystis muris* BLANCHARD, 1885 is a well-known common species from animals of *Muridae*. MIESCHER'S tube was $2\sim 6 \times 0.15\sim 0.2$ mm in size, thickness of cyst membrane $10\sim 15\ \mu$ and spore $10\sim 12 \times 3\sim 4\ \mu$ by the present authors' measurement on their own materials of *S. muris*. The spore of *S. muris* is also crescent in shape. Consequently the two species are easily distinguishable.

Comparison of Spores of *Sarcocystis muris* (A) and *Sarcocystis clethrionomysi* (B) in Same Magnification



Although from certain genera of rodents such as *Cricetulus*, *Pitymys*, *Cavia*, *Marmota*, *Eutamias* and *Lepus*, various species of *Sarcocystis* are known, they

have no identity with the authors' species. A noteworthy characteristic of *S. clethrionomysi* is the minute spore. *Sarcocystis* obtained from a reptilian host inclines to possess minute spores such as *S. lacertae* BABUDIERI, 1931 and *S. pythonis* TIEGS, 1931, but their morphological characters are different from those of *S. clethrionomysi*.

SUMMARY

Sarcocystis clethrionomysi n. sp. from *Clethrionomys rufocanus bedfordiae* THOMAS was described. The parasite was obtained from skeletal muscles of host animal.

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REFERENCES

- 1) BABUDIERI, B. (1932): *Arch. Protistenk.*, **76**, 421.
- 2) TIEGS, O. W. (1931): *Parasitology*, **23**, 412.

EXPLANATION OF PLATE

- Fig. 1. Naked eye appearance of caudal portion of a male vole with *Sarcocystis clethrionomysi*. The animal, a case from Takikawa, was autopsied on July 25th, 1957. $\times 1.5$.
- Fig. 2. Numerous MIESCHER's tubes of *S. clethrionomysi* in abdominal wall. Pressed between two slides and stained with hematoxylin. $\times 11$.
- Fig. 3. MIESCHER's tubes of *S. clethrionomysi* in femoral muscle; longitudinal section. Hematoxylin-eosin stain (H-E). $\times 82$.
- Fig. 4. MIESCHER's tubes of *S. clethrionomysi* in lingual muscle; transverse section. H-E. $\times 82$.
- Fig. 5. Cyst membrane and spores of *S. clethrionomysi*. H-E. $\times 2,000$.
- Fig. 6. Spores of *S. clethrionomysi*. H-E. $\times 2,300$.
- Fig. 7. Cyst membrane and spores of *S. muris*. H-E. $\times 2,000$.
- Fig. 8. Spores of *S. muris*. H-E. $\times 2,300$.

