臺灣省畜衛試所，研報：No.20：97—100 (1984)

Excystation Process of the Poultry Coccidium, *Eimeria Maxima**

Andrew Chang-Young Fei[1] and Yung-Chi Lee[2]

Purified sporulated oocysts of *Eimeria maxima*, isolated from chickens in Taiwan, were broken in a tissue grinder. The released sporocysts were treated with excysting fluid, consisting of 0.5% trypsin and 5% chicken bile in PBS, to dissolve the Stieda body of the sporocyst and to initiate the sporozoite mobility. The excystation process of the sporozoite was examined under the light microscope. The sporozoite body may be constricted to about a quarter of its normal diameter as it pass through the gap in the sporocyst wall. The sporozite gradually protruded from the sporocyst in interval steps.

The excystation of avian *Eimeria* coccidia occurs when the sporocysts released from fractured oocysts are exposed to trypsin and bile in the intestinal tract (Long and Speer, 1977). The trypsin and bile dissolve the Stieda body and the bile also initiates the sporozoite mobility in the sporocysts (Long and Speer, 1977; Wang and Stotish, 1975). This paper discribes the excystation process of *Eimeria maxima* isolated from chickens in Taiwan.

Oocysts of *E. maxima*, isolated in Taiwan by Lee and Liu (1978), were collected, sporulated, and concentrated by the methods of Reley *et al.* (1976). The purified oocysts, suspended in PBS, pH 7.6, were broken in atissue grinder. The released sporocysts suspended in PBS were placed on a slide, and acover slip was added. A drop of excysting fluid, cosisting of 0.5% trypsin and 5% chicken bile in PBS with the pH adjusted to 7.6, was placed at the edge of the cover slip and allowed to diffuse through the preparation while it was being examined under microscope.

Excystation occurred within 1 to 2hr after the excysting fluid reached the sporocysts. The sporozoites began to undergo gliding movements within the sporocysts, sometimes exchanging places with each other. The position of sporocystic body was also changed (Fig. 1b and 1c). The Stieda body usually became less distinct, and eventually disap-

1. Taiwan Provincial Research Institute for Animal Health, Tansui, Taiwan, R. O. C.

2. 2. Department of Veterinary Medicine, National Taiwan University, Taipei, Taiwan, R. O. C.

*from *Bull. Inst. Zool., Academia Sinica* 23(1) : 123—125.

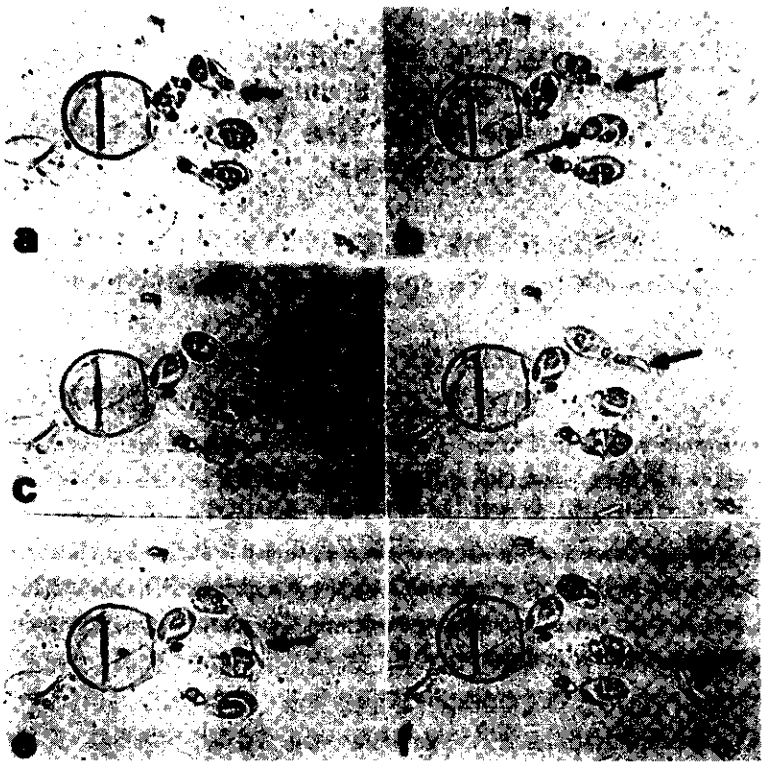

Fig. 1. Photomicrographs of sporocysts of *Eimeria maxima*, fresh preparation, ×400. Sporozoite indicated by solid arrow; sporocystic body indicated by dotted arrow. a, one sporozoite was ready to protrude; note the gap earlier occupied by the Stieda body. b, sporozoite began to protrude; note the position of the sporocystic bod. c, more pronounced protrusion of the sporozoite; note the position of sporocystic body (compare Fig. 1b). dand e, sporozoite moving through the gap at the end of sporocyst, f, the protruded sporozoites, moving actively.

peared. During excystation, sporozoites leaved through a gap at one pole of the sporocyst created by dissociation of the Stieda body (Fig. 1a). The sporozoite body may be constricted to about a quarter of its normal diameter as it pass through the gap in the sporocyst wall (Fig. 1b, 1c, and 1d). The sporozoite gradually protruded from the sporocyst in interval steps which varied from 10 to 40 min. Excystation of sporozoites from sporocysts occurs much more slowly in this species without a substieda body than in other *Eimeria* species with a substieda body (Hammond *et al.*, 1970; Roberts *et al.*, 1970).

REFERENCES

Hammond, D. M., J. V. Ernst and B. Chobotar (1970) Composition and function of the substiedal body in the sporocysts of *Eimeria utahensis*. *J. Parasitol.* 56 : 618—619.

Lee, Y. C. and C. C. Liu (1978) The investigation of the distribution of the patho-

genic chicken coccidia in Taiwan. *J. Chienese Soc. Vet. Sci.* 4··81—87.

Long, P. L. and C. A. Speer (1977) Increasion of host cells by coccidia. *Sym posia Brit. Soc. Parasitol.* 15 : 1—26.

Roberts, W. R., C. A. Speer and D. W. Hammond (1970) Electron and light microscope studies of the oocyst walls, sporocysts and excysting sporozoites of *Eimeria callospermophili* and *E. larimerensis. J. Parasitol.* 56 : 918—929.

Ryley, J. F., R. Meade, J. Hazelhurst and T. E. Robinson (1976) Methods in coccidiosis research: separation of oocysts from feces. *Parasitology* 73 : 311—326.

Wang, C. C. and R. L. Stotish (1975) Pancreatic chymotrypsin as the essential enzyme for excystation of *Eimeria tenella. J. Parasitol.* 61 : 923—927.

雞*Eimeria maxima*球蟲之脫囊過程*

費昌勇[1] 李永基[2]

自臺灣分離之 *E. maxima* 球蟲卵囊經組織研磨器磨碎後以含 0.5% trypsin 和5%雞膽汁之 PBS, pH7.6，之脫囊液處理以溶解 Sporozoite之 Stieda 體。於光學顯微鏡下可見 Sporozoite 自 Stieda之被溶解後之空隙鑽出（脫囊）。Sporozoite蟲體於鑽出時，其直徑會縮小至原來之四分之一細，呈間歇性鑽出。

1.臺灣省家畜衛生試驗所

2.國立臺灣大學獸醫系

*中央研究院動物研究所集刊23卷1號，123—125頁。