Trop. Med., 40 (1), 45−46, March, 1998

A Preliminary Study on Susceptibility of Mice of Various Strain to *Hymenolepis nana* Eggs

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Abstract: Mice of various strain were given orally eggs of *Hymenolepis nana* maintained by ddY mice and sacrificed for the adult worm recovery 2 weeks after the administration of the eggs. The mice of ddY, ICR, C3H and BALB/C were highly susceptible to the eggs while those of DBA/2 and C57BL/6 were less susceptible.

key words: Hymenolepis nana, mouse, infectivity

Mice-*Hymenolepis nana* model is useful for the experimental chemotherapy of infection with cestodes (Thomas and Gönnert, 1977). However, no detailed information has been reported so far in terms of the susceptibility of various-strain mice to *H. nana* eggs. The present paper, though a preliminary one, deals with this matter.

The life cycle of *H. nana* was routinely maintained using female ddY mice without intermediate hosts as follows. Faecal pellets in the rectum of mice infected 2 weeks previously were suspended in normal saline, macerated and filtered through a wire mesh to remove large debris. The filtrate was washed 3 times in saline with centrifugation at about 1,200 r.p.m. and was stirred for 10 min for their shell removal in a cylindrical glass vessel containing a magnetic stirrer and glass beads (diameter: about 1㎜). This method was originally reported by Berntzen and Voge (1965). In the present authors' investigation, the shells of more than 90% *H.nana* eggs were removed. After counting the number of the eggs, the suspension was diluted with saline to adjust the egg concentration. Each mouse was given 0.4 ml of the suspension containing 50 shell-removed (deshelled) eggs using a stomach tube. Two weeks after the inoculation with the eggs, faecal pellets excreted by the mice were examined to be positive for *H.nana* eggs. The rectal eggs from these mice were used for another passage.

In the present study, 7-week-old female mice of 6 strains, ddY, ICR, DBA/2, C57BL/6, C3H and BALB/C were orally inoculated with 50 deshlled eggs from the mice used for the maintenance of *H. nana.* Two weeks after the inoculation, the mice in all the groups were sacrificed for the adult worm recovery from the mouse intestine. The number of the scolex of the adult worms was counted under a stereoscopic microscope. In the present study, egg-positive rates in faecal pellets were not examined, though infection with adult worms was confirmed in each mouse strain.

Received for publication, April 30, 1998

The number of adult worms recovered is compared in Table 1. The recovery rate was about 70 to 90% except for the 2 strains of DBA/2 and C57BL/6. The recovery rate in these 2 strains was about 3 and 37% respectively. These mice showing a low recovery rate under the present conditions seem to be unsuitable for experimental chemotherapy of *H.nana* infection.

Infectivity of mice of various strain was compared. However, the source of the eggs orally administered for the comparison was limited in the present preliminary study. They were harvested from ddY mice used routinely for the maintenance of *H.nana*. Therefore, the combination of mouse strains and *H.nana* eggs derived from infected mice of various strain still remains to be studied further. A good combination of mouse strain and *H. nana* eggs will play an important role in experimental chemotherapy of *H. nana* infection.

The present authors are interested in the test on effectiveness of medicinal-plant extract on parasites (Maki et al., 1996). Mice highly susceptible to *H.nana* are worthy of being experimentally given extracts from medicinal plants.

Table 1. Recovery of adult *Hymenolepis nana* from mice of various strain

Mouse strain	Mean number of worms recovered		standard error	Number of mice
ddY	45.5	±	7.7	4
ICR	36.2	±	2.4	4
DBA/2	1.5	±	1.0	4
C57BL/6	18.7	±	3.6	4
C3H	38.5	±	2.1	4
BALB/C	37.5	±	2.1	4

Seven-week-old female mice of each strain were orally inoculated with 50 deshelled eggs and sacrificed for adult worm recovery 2 weeks after the inoculation.

ACKNOWLEDGEMENT

Professor Dr. Ito, A., Department of Parasitology, Asahikawa Medical College is gratefully acknowledged for the donation of viable *H.nana* eggs.

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