

5042

Experiments on Immunity of the White Rat to *Cysticercus fasciolaris*.

HARRY M. MILLER, JR. (Introduced by J. Bronfenbrenner.)

From the Department of Zoology, Washington University.

To date experimental evidence is lacking that animals may acquire immunity to cestode parasites as a result of periodically injected worm material or extracts of it. In fact the data concerning active immunity to any metazoan parasite are meagre and have only recently been reported.

Cysticercus fasciolaris, in the liver of the rat and mouse, is the larval stage of *Taenia taeniaeformis* (*crassicollis*) in the intestine of the cat. Infestation of the rat results from accidental ingestion of the onchospheres in the feces of the cat. These penetrate the intestinal wall of the rat, reach the liver via the portal system, and eventually develop into long strobilate cysticerci in connective tissue cysts of host origin. When ingested by the cat these mature in the intestine.

We have succeeded in immunizing the white rat by periodic injections of dried pulverized worm material as a 1% suspension in 0.1% HCl. Small quantities were injected intraperitoneally at 2 or 3 day intervals, and 5 weeks after the last injection both control and immunized animals were fed equal portions of a uniform suspension of onchospheres by means of a stomach tube. After a period of a month 9 control animals had from 10-42 (average 21.4) cysts, 2-5 mm. in diameter, in the liver; while for the most part the young worms in 9 immunized animals were dead, being represented by small, well-circumscribed spots (usually 1 mm. in diameter) in the liver. The average number of these was 21.1. A few control animals also showed spots (1-12) representing degenerated worms; and a few immunized animals showed, in addition to the necrotic cysts, small numbers of living cysts, usually much smaller in size than those in control animals.

The results of another experiment, in which the experimental animals were injected periodically with finely ground live worms, were equally conclusive. Some evidence was found that the acquired immunity may persist as long as 5 months. The animals of several other experiments have not yet been killed.

Some experimental evidence has also been secured that the presence of one or more huge cysts confers immunity to a superinfestation.