6250

Acquired Immunity Against a Metazoan Parasite by Use of Non-Specific Worm Materials.*

HARRY M. MILLER, JR.

From the Department of Zoology, Washington University.

Both active and passive immunization of the rat against infection by onchospheres of *Taenia taeniaeformis* have been adequately demonstrated.[1] A series of 6 injections of a 1% suspension of the powdered worm usually results in complete protection against infection. Only one attempt, previous to the present experiments, was made to produce immunity by the use of related worm materials; injection of powdered *T. pisiformis,* a tapeworm of the dog, did not protect rats against infection by larvae of *T. taeniaeformis.*

In experiment I powdered *Diphyllobothrium latum, Taenia saginata, Hymenolepis sp.,* and *Dipylidium sp.* were used. One lot of control rats received a similar series of injections of *T. taeniaeformis* material and another (uninjected) served as controls on the viability of the *taeniaeformis* onchospheres with which all rats were fed. Autopsy data (Table I) show that little or no protection was

TABLE I.
Figures give the average number of cysts in liver.

Exp. No.	Material used	Method	No. of Rats	Living Cysts	Dead Cysts
1	*Diphyllobothrium latum*	Intraperitoneal	8	173	8
	Taenia saginata	"	9	104	38
	Hymenolepis sp.	"	10	145	20
	Dipylidium sp.	"	9	168	23
	Taenia taeniaeformis (controls)	"	10	21†	17
	Untreated controls	—	10	206	7
2	Living *Cysticercus fasciolaris*	Placed in body cavity	7	—	2
	Living *Taenia pisiformis*	"	6	15	22
	Untreated controls	—	7	214	12
3	Onchospheres of *T. pisiformis*	Fed once	9	152	19
	"	Fed twice	9	100	31
	Untreated controls	—	12	215	8

† No living cysts in 7 rats.

* This investigation was made possible by a grant for research in science made to Washington University by the Rockefeller Foundation.

[1] Miller, H. M., Jr., PROC. SOC. EXP. BIOL. AND MED., 1930-1932, **27**, **28**, **29**; *J. Prev. Med.*, 1931, 1932, **5**, **6**; and papers in press.

afforded by these non-specific cestode materials, following their injection as suspensions of powdered worm.

On the other hand, introduction into the peritoneal cavity of rats of whole, or long pieces of, living *Taenia pisiformis* resulted in a high degree of protection against infection by the larvae of *T. taeniaeformis*, as was shown by infecting the rats some weeks after the operations (Exp. 2). The control animals into whose body cavities the cysticercus stage of *taeniaeformis* had been placed contained no living cysts at autopsy, while the untreated controls were heavily infected.

On one earlier occasion the mistake had been made, in one experiment, of feeding onchospheres of *T. pisiformis* instead of *T. taeniaeformis*. When these rats were subsequently fed onchospheres of the proper species it was found that the control (untreated) animals were refractory to infection, although control rats of other experiments to which portions of the same lot of onchospheres had been fed became heavily infected. To test the hypothesis that feeding with eggs of one species would confer protection against infection with those of another, in this case, closely related, species, rats of one group (Exp. 3) were fed once with 1500 *pisiformis* onchospheres, and those of a second group were fed again, 3 weeks later, with approximately 9000 onchospheres each. These anmials, together with brother and sister (untreated) controls, were fed *taeniaeformis* onchospheres several weeks later. The autopsy data are shown in the table.

6251

Studies on Blood Diastase.

MICHAEL SOMOGYI.

From the Laboratory of the Jewish Hospital of St. Louis.

Diastase is known to be a normal constituent of human blood, but available information as to its quantity is inconsistent. The variety of measuring units and the multiplicity of methods render it impossible to correlate results and to explain conflicting conclusions. Even one and the same technique yields different results in the hands of different workers. One factor responsible for this situation is the use of soluble starch as substrate in measuring the enzyme action. It is practically impossible to prepare 2 identical