

PARASITOLOGY

Anti-Trichinosis Drug

A powerful drug, thiabendazole, has been found that prevents trichinosis, a worldwide disease that cripples animals, for which so far there has been no other effective drug.

➤ A POWERFUL new drug has been found effective against the parasitic worm that causes trichinosis in man and animals.

The drug, thiabendazole, prevents the infection. More importantly, it kills immature parasites in the muscles of mice and swine, the most harmful phase of the disease in man, parasitologists learned in Washington.

Trichinosis is a worldwide problem, infecting the flesh of animals, especially swine, and acquired by man through eating the infected meat. The disease is widespread in the United States, often painful, and fatal in some cases.

No other drug is effective for the most harmful phase of the disease in man, two researchers from Merck Institute for Therapeutic Research, Rahway, N. J., reported at the joint meeting of the American Society of Parasitologists and the Helminthological Society of Washington.

Thiabendazole was given to a group of mice and swine with many worms in their muscles. The treated animals were cured while untreated animals from a similar group died.

Although it is not yet known whether the drug will be effective in man, it has been found to combat a wide variety of roundworm parasites affecting domestic animals, Drs. W. C. Campbell and A. C. Cuckler reported.

The similarity of trichinosis symptoms to a number of other acute and chronic diseases of man make it very difficult to diagnose. One of the reasons appears to be that the parasites possess antigens (the substances which produce antibodies) which are similar to or the same as those in the host.

The suggestion of "eclipsed antigens," the parasite's antigens, was made by Dr. Raymond T. Damian, professor of biology at Florida State University, Tallahassee.

Many parasites, including bacteria and worms, have been recorded as possessing antigens which are found in their hosts, he said. This may be a common phenomenon as a result of the evolutionary process.

Experiments aimed at providing a more specific diagnostic test for trichinosis were also reported at the meeting. There are at least 11 antigens in the larvae of this parasite that cause the host to produce antibodies.

Simple methods of purification of extracts of the parasite larvae yield products indicating that the antigens are proteins, Dr. Charles E. Tanner of the Institute of Parasitology, McGill University, Quebec, Canada, reported. These results may lead to a better and easier way of diagnosing the disease in man.

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Parasites Also Beneficial

➤ A BENEFICIAL tapeworm seems strikingly impossible but just such a creature has been discovered at the Upstate Medical Center in Syracuse, N. Y.

By definition, a parasite lives at the expense of its host, giving nothing of value in return. In fact many such "beasties" cause damage to the animal which feeds them. But Dr. Justus F. Mueller told parasitologists of his astonishing find: a tapeworm that helps its host.

Young female mice, injected with larval tapeworms known as spargana, were found to gain weight faster than control mice on the same diet, he said. The reason is unknown, but the weight of the worms or abnormal organ growth was ruled out.

The tapeworm is not the only beneficial parasite, however, Dr. Mueller explained. The normal flora of the intestine is sometimes toxic to infants, but becomes an important source of nutrition in the adult.

The other side of the balance was pointed out by three investigators from Venezuela, however. They explained that the hookworm, which infects more than 450,000,000 persons, sucks as much as 30 or 40 times its weight of blood each day.

This parasitic infection decreases work capacity, marked with symptoms of apathy and fatigue.

There are markedly more parasites that are harmful to humans, animals and plants than are beneficial. The purpose of renewing techniques to exterminate or in other ways combat these pests was shown at the meeting in Washington, D. C., of the American Society of Parasitologists and the Helminthological Society of Washington.

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Females More Resistant

➤ FEMALES are notably more resistant to certain infections than males. For mice, at least, it is apparently due to intestinal bacteria.

Although the better resistance of females has been known for some time, the role of intestinal bacteria had not previously been suspected, Drs. W. L. Newton, P. P. Weinstein and T. K. Sawyer, National Institute of Allergy and Infectious Diseases, Bethesda, Md., reported to the American Society of Parasitologists in Washington.

"Conventional mice" were infected with intestinal worm parasites. When examined 18 days later, the females had only half the number of worms as the males. When germ-free mice were inoculated with the parasites, the sex differences did not occur.

In other experiments, germ-free mice were

infected with only the common intestinal bacterium *Escherichia coli*, followed by an inoculation with parasites. The differences between males and females in number of worms were again apparent.

Intestinal flora (bacteria) is believed responsible in some way for the differences. Whether due to one particular organism or to the number of organisms is not known.

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GENERAL SCIENCE

Science Service Charter Bill Passes House

➤ A BILL to give a Congressional charter to SCIENCE SERVICE, INC., has been unanimously passed in the House of Representatives on the Consent Calendar. The Bill, H.R. 11711, has now gone to the floor of the Senate for action.

The Bill provides for the further encouragement of the youth of the nation in science activities. Since 1941 SCIENCE SERVICE has been operating a continually expanding science youth program, which includes Science Clubs of America, the annual Science Talent Search and the National Science Fair-International.

SCIENCE SERVICE, INC. is a privately endowed non-profit organization, founded in 1921.

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CHEMISTRY

Insecticide Poisoning Detected by New Test

➤ INSECTICIDE poisons can be detected in humans by a highly sensitive method.

Originally developed by U.S. Army chemists to detect deadly nerve gases, the analytical method can be used to spot poisonous compounds, such as insecticides and industrial chemicals, in the human body.

Insecticides are blamed for reducing bird populations, polluting water and killing fish. Their harmful effect on humans through widespread use on farm crops and forests has been a tremendous problem in recent years.

The Army test detects organophosphorus compounds (widely used as insecticides and petroleum additives) that may poison the body by interfering with the proper passage of nerve impulses to the muscles.

Equipment is used in which the body chemical cholinesterase acts on another chemical to cause a voltage drop in an electric circuit. The presence of a nerve gas disrupts this action much as it disrupts nerve impulses in the body. The rate of the voltage drop is reduced, and the reduction is a direct measure of the amount of the nerve gas present. The test is accurate to one percent.

Lt. George G. Guilbault, research chemist at the Army's Chemical Research and Development Laboratories in Maryland, described the method before the American Chemical Society's division of medicinal chemistry at its Eighth National Symposium in Boulder, Colo.

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