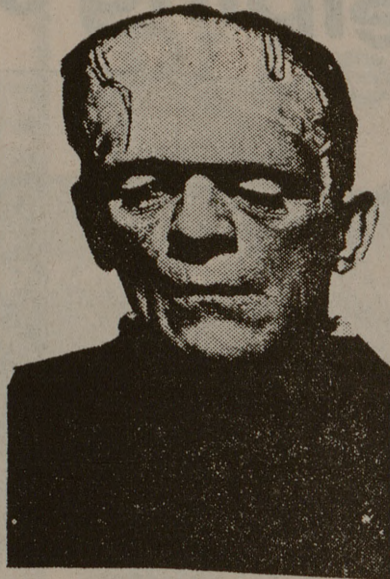


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A&M researchers seek tropical disease cure

By Greg Sellers
Reporter

Researchers at Texas A&M currently are searching for a cure to a tropical disease that has infected 300 million people.

All of those infected with the disease, which is caused by a blood fluke organism called schistosoma mansoni, live on or near the equator. The parasite may live in victims' circulatory systems for decades before killing them, says Dr. Walter Kemp, head of the biology department at A&M.

Kemp says snails carry the parasites, which are transferred to the waters on or near the equator. Humans then are infected with the worms, which penetrate the skin while in the water.

"Our primary interest with this research is how the worms escape humans' immune response," Kemp says. "They (worms) circumvent the immune response and use it to their advantage."

Kemp has been conducting research on the schistosoma mansoni for 20 years; he started as a graduate student at Tulane University in New Orleans.

Brazil's ever-expanding agriculture has increased spread of the disease because the snails infect the country's water supply, he says. He says he's collaborated with officials in Brazil to find a cure for the disease, which takes 10 to 20 years off a person's lifespan.

Most of the funding for the research comes from the U.S. government, with about 75 percent coming from the National Institute of Health since 1975, Kemp says. He receives about \$250,000 per year.

"It's a very competitive situation (trying to get grants)," Kemp says. "Our work is evaluated by reviewers in Washington at the NIH, which is called a review."

Kemp says he chaired the review board for two years and was on the panel for four years. The peer-review process ensures the research is being done at advanced levels and thus far, A&M's researchers have been at the top of the nation's research, he says.

"This (research) is as good or better than anywhere in the nation," Kemp says. A&M must compete with researchers from Harvard, Vanderbilt and the University of Georgia for funding. And so far, it's received more grants in the past one and a half years.

Experts urge owners to treat pets, homes for flea 'plague'

By Craig Eichhorn
Reporter

If it seems like your pet is digging and scratching due to flea bites more than ever this summer, your pet is not alone.

That's because it is a bad summer for fleas. But this flea plague is because of a mild winter, says Dr. Floron Faries, project supervisor for the College of Veterinary Medicine.

Normally the winter is cold enough to slow down the adult fleas so they don't lay as many eggs, he says. Last winter wasn't cold enough and as a result, more eggs than normal were laid, he says.

Eggs hatch slowly in the winter, if at all. The larvae and pupae stages may not ever hatch in a severely cold winter, he says. This winter was more of a hibernation for the eggs and larvae, he says.

Fleas need moisture and humidity to survive and the great amount of rain during the spring aided the eggs in hatching, Faries says. The rain and moderate temperatures of the early summer helped create ideal conditions for the flea life cycle.

The flea life cycle consists of four stages, Faries says.

The first stage is the egg stage, in which the immature flea remains about one week. Next comes the larvae stage, in which it remains for one to two weeks. The larvae are worm-like and feed on organic matter, dirt, pet dandruff, hair and even the feces of adult fleas.

The third stage is the pupae, or cocoon, stage, which usually lasts about a week. Through metamorphosis, an adult flea hops out and begins the fourth stage of the flea cycle.

The process from egg to adult flea takes three to four weeks, Faries says. Most of the stages occur in the environment of the host, or pet, not on the host.

Adult fleas can live months without having a meal — the blood of a pet or human, he says. The fleas that do have regular blood meals can live years.

Dr. Clifford Hoelscher, an entomologist at Texas A&M, says "That's why one may enter a house, an apartment or a barn that has been vacant for over a year and the place is still crawling with fleas. They can survive without a host that long."

Contrary to popular belief, fleas aren't constantly hopping around. Fleas, like mosquitos, need carbon dioxide for movement, Faries says. If there isn't enough carbon dioxide in the environment the fleas remain relatively still, he says.

When a dog or cat lies on the carpet or floor and exhales carbon dioxide, the fleas hop to the pet because of their attraction to carbon dioxide, he says.

People who sit in a flea-infested area will attract fleas because they also exhale carbon dioxide, he says.

Fleas prefer to feed on dog or cat blood, but they'll feed on human blood if hungry enough, he says.

Hoelscher says some people are more attractive to fleas than others. This is similar to mosquitos, which prefer one person's blood over another's, he says.

Once the adult flea has received enough carbon dioxide to move around and jump on the pet, it looks for places to feed, Faries says. The adult fleas also look for a mate and may breed on the pet, he says.

The female flea will leave the host to lay eggs in the environment, he says. A single female adult flea is capable of laying hundreds of eggs in her lifetime.

Just because a pet owner sees five to 10 fleas on a pet doesn't mean there are just five to 10 fleas in the environment, he says.

There may be as many as 1,000 fleas in the environment, he says.

Ending the flea problem inside the house is much more difficult than simply setting off a fogger and leaving for a while, Hoelscher says.

Foggers are expensive and don't work as well as direct sprays in controlling the flea population, he says.

"It's easier to use a fogger," he says. "That's why they are so popular."

Hoelscher and Faries agree that the whole house should be sprayed for fleas, not just part of the house or part of one room.

Hoelscher says flea-pestered pet owners should spray underneath

"The problem with most homeowners and the flea problem is that they want to put an insecticide on one time and hope to get rid of the problem. That is not possible."

— Dr. Clifford Hoelscher, entomologist

couches, chairs and other furniture to get the insecticide to the fleas.

Because fleas don't crawl around and come to the insecticide the way cockroaches do, Faries says homeowners must get the insecticide to the fleas for it to be effective.

Hoelscher says, "The general public doesn't realize that you have to get the material to the flea. These materials work on contact and if a pet owner doesn't spray underneath objects, or in the back of closets or corners of a room, they won't kill the fleas that are there. It's that simple."

Hoelscher recommends using insecticides containing Dursban, Diazinon or Saftrolin to kill adult fleas inside the house, but these chemicals do not affect the egg, larvae or cocoon stages of the flea.

Dursban and Diazinon are effective in killing adult fleas outside the house as well, he says.

Although there are other chemicals that are just as effective, these three are more readily available to the public, he says. The others are used by professional exterminators.

Precor is a chemical used in insecticides to kill eggs and developing larvae, Hoelscher says. Precor is an insect growth regulator and now is available in combinations with the chemicals effective in killing adult fleas.

Hoelscher says ready-to-use insecticides should be used instead of those that require the owner to mix a certain chemical with water.

Members of the general public aren't very successful with mixes because they don't follow the instructions and wind up not mixing it right, he says. Ready-to-use insecticides contain the correct dosage and don't damage household objects.

The insecticides mixed with water may spot or stain furniture, carpet, upholstery and wallpaper, he says.

"Read and follow the label directions if you are doing self-treatment," he says. "The companies spend thousands of dollars developing these labels, which give directions for use, how much insecticide to use and how often to use it."

Re-application of insecticide is a must to control the flea population.

The residue from the insecticide may last up to one week, Hoelscher says. But, with new eggs hatching every seven days or so, the insecticide wears off and leaves fleas unharmed in the environment.

"The problem with most homeowners and the flea problem is that they want to put an insecticide on one time and hope to get rid of the problem," Hoelscher says. "That is not possible."

Most people with flea problems fail to monitor re-infestation, he says. A simple way to monitor this is to drag a piece of white paper across the room, or lay it down where the pet normally lays. If fleas are seen jumping on the paper, there is a flea problem, he says.

When people feel fleas biting them, it means a lot of fleas are in the house, Hoelscher says.

People who don't want to deal with insecticide themselves should hire a professional exterminator, he says.

Hiring a pest-control operator is preferable for some people because they don't have to buy insecticides, worry about poisoning their kids or a pet, Hoelscher says.

Faries says, "It is highly recommended to have a professional exterminator because they understand dosages, concentrations and danger and safety hazards of insecticide."

The exterminator has to know where the fleas are, he says. The exterminator, as well as the homeowner, should use insecticide on a regular basis.

Outside the house, the insecticide needs to be applied in bushes, porch, in and around the dog and in shaded areas, he says.

Hoelscher says practical measures must be taken along with the application to avoid re-infestation.

General cleaning is mandatory, he says. Vacuuming carpets and mopping floors cuts down on the number of breeding sights for fleas, he says.

Faries says because fleas need humidity and moisture, dry help kill all four stages of the flea life.

Vacuuming provides heat and the vacuum doesn't suck up adult fleas, larvae, eggs and many of them will still be in the heat emitted from the vacuum, he says.

After vacuuming, the bags should be thrown away, Hoelscher says. The vacuum cleaner should be standing, which allows fleas to escape and re-enter the environment.

Ultraviolet rays of the sun in the early stages of flea life. Opening the curtains and letting sun's rays in helps kill them, he says.

Hoelscher says after the flea problem is under control, a twice-a-week vacuuming program should be used to keep the fleas from re-infesting the environment. The cleaning program also will help the environment free of house spiders and roaches.

Treating pets is another important measure in flea control. The treatment of the inside of the house, Hoelscher says, should be done at the same time as the treatment of the outside of the house, he says.

The best chemical to treat with is Paramite, a liquid insecticide water and used as a dip, he says.

Dr. Michael Sarver of the University of Texas says it is essential to get the head wet during dipping. If the pet is not done properly and the head is not wet, all the fleas on the pet will die.

To avoid chemical irritation to a pet's eyes, Hoelscher suggests putting a drop of mineral oil in the corner of each eye.

Other forms of flea control include dusts, sprays and shampoos, Faries says.

A spot insecticide is applied to the skin of the pet. The insecticide is absorbed by the bloodstream, fleas bite and suck blood, the insecticide will kill them, he says.

A tablet that is taken orally by the pet also absorbs insecticide in the bloodstream and has the same effect as the spot insecticide, he says.

"It's surprising how many pet owners like the tablets because they are so easy to use," he says. "Pet owners don't have to handle insecticide, like spraying or dipping, they don't have to bathe their pet."

One drawback of the spot insecticides and tablets is they work in the bloodstream and have to be absorbed by the host, Faries says. Many fleas are on the host and will suck any blood, or will die enough to kill them.

But by giving too much insecticide to the pet, one reduces the health of the environment. Fleas live, he says. Winning the war against fleas involves treating the environment and the pet.