

HEALTHY LIVING

Gator blood touted as potential source of lifesaving drugs

BY BOB KEEFE
Cox News Service

Someday an alligator might save your life.

Researchers in Louisiana say they've discovered unique antibiotic proteins in the blood of American alligators that can kill a wide variety of deadly bacteria, halt the spread of common infections and perhaps even stop HIV. If they're right and they're able to sequence the genetics of gator blood, the researchers say super drugs based on their findings might be available within 10 years.

"It's pretty exciting," said Lancia Darville, a Louisiana State University researcher who presented the findings at a meeting of the American Chemical Society in New Orleans in early April.

The alligator has developed a special immune system during its long evolution, Darville said.

"If you think about alligators, they usually get into a lot of fights and get cuts and bruises and torn limbs, and they live in swamps that have a whole lot of bacteria," she said. "But even in the presence of all that bacteria, they (almost) never get any infections."

The reason is that gators have unusually

strong immune systems, Darville said. Unlike humans, they have systems that can fight off different types of bacteria, viruses and fungi without having been exposed to them previously.

Darville and study co-author Mark Merchant, a longtime alligator researcher at McNeese State University in Louisiana, have been doing gator blood research for years. Previous studies by Merchant and other scientists, including some at the University of Georgia and the University of Florida, have produced similar findings.

Technology, however, is taking research to new levels. Darville and Merchant are sequencing the genetic makeup of alligator blood to figure out how to make chemicals



PHOTO BY SCOTT WISEMAN / COX NEWS SERVICE

In lab experiments, proteins extracted from alligators destroyed the bacteria behind deadly staph infections, fungi behind yeast infections and, in at least one study, most of a sample of HIV.

based on it, the next step in developing new drugs.

Possible drugs include creams that could be used to treat ulcers of diabetes patients or prevent infections in amputees, and pills to fight internal infections and bacteria.

Researchers say they've determined that

the proteins found in alligator blood can fight 23 types of bacteria, nearly three times as many as the proteins found in human blood.

At least in lab experiments, proteins extracted from gator blood destroyed the bacteria behind deadly staph infections, different fungi behind yeast infections and, in at least one study, most of a sample of HIV, Darville and Merchant said.

For researchers, getting blood from alligators is easier than it may seem. As part of his work at McNeese State, Merchant runs an alligator farm. To get samples, researchers simply catch and tie up gators, extract some of their blood and carefully release them.

Swamp voodoo practitioners might already know about the wonders of alligator blood, but researchers caution that people shouldn't ingest it or handle it directly. Raw, unprocessed blood from alligators — just like that of any other animal — could sicken or kill humans.

"We've gotten a couple of questions from people who say, 'Why can't we just take some alligator blood and let it work?'" Darville said.

"But just like most things, our bodies are going to reject anything that's not familiar to it." ■

Insulin administration: Researchers in Texas work toward making a pill for diabetics

BY MARY ANN ROSER
Cox News Service

For many diabetics who inject insulin several times a day to survive, swapping needles for pills is a long-held fantasy.

But an insulin pill could be edging closer to the real world. New research at the University of Texas shows that a way to deliver an insulin pill to the bloodstream has worked in the lab, clearing the way for tests on animals and, ultimately, humans.

Nicholas Peppas, a professor of chemical engineering, biomedical engineering and pharmaceuticals, has spearheaded the discovery of a gel-like material that protects the insulin as it enters the harsh, acidic stomach — the place where most pills break down.

The insulin loaded into Peppas' gel stays intact on its way to the small intestine so it can be absorbed into the bloodstream, according to a paper Peppas and two UT researchers published recently in *Biomacromolecules*, an American Chemical Society journal.

"We are talking to companies right now and are close to closing a deal with a company that would do the animal studies," Peppas said recently. He declined to name the companies because no contracts have been signed.

After an article about the work appeared in an Australian magazine in May, Peppas said patients in Australia started calling to find out when the pill would be available.

Drug development takes a long time, Pep-

pas said, adding that his work with Kristy Wood and Gregory Stone, UT doctoral students who graduated last year, is about halfway there. If everything goes well, Peppas said, the pill could be on the market in seven years. Other researchers around the world also are competing to develop the first insulin pill.

Peppas envisions the drug being used initially by adults with type 1 diabetes, which occurs when the body can't make insulin, a hormone that converts sugar, starches and other food to energy. Eventually, the pill could be used on any diabetic who injects insulin, he said.

"I like this idea a lot," said Dr. Tom Blevins, an Austin, Texas, endocrinologist. "It's a fascinating technology."

"As a clinician, I love to see people making drug delivery more easy for people with diabetes. It's tough enough for them."

Producing a pill is a challenge, he said, because tiny changes in dosing, regulated easily by injection, are needed to keep blood sugar levels from teeter-tottering dangerously throughout the day.

Dr. Craig Spellman, a Texas Tech University official who leads the Texas Diabetes Council's Health Care Professionals Advisory Committee, said the research sounds interesting but agrees that a lot of work remains.

Alternatives to injections have proved elusive. Inhalable insulin was not the boon that drug manufacturers thought it would be, and some patients had negative reactions, said



PHOTO BY LAURA SKELDING / COX NEWS SERVICE

University of Texas professor Nicholas Peppas led the discovery of a gel-like material that allows insulin to enter the bloodstream via a pill. At right are graduate research fellows Diana Snelling and Daniel Carr.

Spellman, associate dean of research and professor of medicine at the Department of Internal Medicine at Tech's Permian Basin school at Odessa, Texas. Most companies have discontinued investing in that work.

Spellman's research is aimed at regenerating cells in the pancreas so they can work again to produce insulin. "That's the holy grail," he said.

Diabetes is a growing problem in the United States. Data from the Texas Behavioral Risk Factor Surveillance System shows

that 7.9 percent of Texas adults had diabetes in 2005, compared with 7.3 percent of adults nationally. A year later, 8 percent of Texas adults were diabetics, compared with 7.5 percent of U.S. adults. Blacks and Hispanics had the highest rates.

"Anything that can offer an alternative to patients who have to take insulin so they wouldn't have to inject it, we support it," said Carole Lieber, a spokeswoman for the American Diabetes Association's Houston office. "People just don't like shots." ■

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