Red tide is usually a killer – one of the surest things to decimate marine wildlife and erode the tourism and fishing industries.

But researchers at UNCW’s Center for Marine Science have found a potential lifesaver from the deadly algal blooms.

For the past five years, researcher Daniel Baden and his team have studied the toxins the red tide produces and their health effects.

What they found was an antitoxin that is 100 times more effective than any other drug for treating cystic fibrosis.

“This is truly bench-to-bedside research,” Dr. Baden, director of the University of North Carolina at Wilmington’s Center for Marine Science. “We weren’t looking for this. It’s one of those things where you put observation together with opportunity and you make discoveries.”

Three years into the study, research assistant professor Andrea Bourdelais was testing the toxins from red tide on mosquito fish swimming in 50 milliliter beakers of water. The small multicolored fish usually died within seven minutes. But in one toxin sample, the fish lived about 17 minutes.

“That was almost a shot in the dark,” she said.

Calling the fish experiment a “eureka moment,” Dr. Baden said his research assistants ran down to his office, telling him he had to see their accidental discovery.

After further study, the research team discovered that red tide produces at least two antitoxins to help neutralize its own toxins.

Since the red tide’s toxins contaminate shellfish and cause respiratory irritation similar to asthma in humans and other marine wildlife, the team guessed the antitoxin would have the exact opposite effect.

So they tried the antitoxin out on asthmatic sheep, and it effectively opened breathing passages.

“Not only did it work, but it works at a million times lower concentrations than any other drug,” Dr. Baden said.

And it works in an entirely different way than current drugs that treat lung ailments. That means the discovery could lead to a whole new set of drugs.

“There is a lot of testing that needs to be done, but this could really, really be a major product,” said Fred Tyson, program administrator at the National Institute of Environmental Health Sciences, which provided funding for Dr. Baden’s research.

This could be big because cystic fibrosis, the most common cause of chronic lung disease in children and young adults in America, kills 60 percent of the children who have the genetic disease before they reach adulthood. There are few treatments for the condition.

The discovery could also be of use to the Department of Defense. Dr. Baden said he is discussing the potential uses with defense representatives, since many chemical toxins that could be used by terrorists negatively affect the lungs. The red tide’s antitoxins could be used to quickly clear the lungs of people exposed to irritants.

UNCW is working with aaiPharma, a pharmaceutical drug company in Wilmington, to develop the potential use of the discovery.

Together, they have three patents pending and are in the early stages of development.

“We can take the innovative discoveries from the public universities and bring them in house to a private industry that specializes in the development of these candidates to potentially therapeutic drugs,” said Steve Fontana, vice president of patents and intellectual property at aaiPharma. He declined to give the terms of the agreement between the two.

Despite UNCW and aaiPharma’s collaborative research efforts, it could be years before any form of the antitoxin is on the market for human use.

“It’s too soon to be able to put a realistic time frame on it,” Mr. Fontana said.