Today Scorpions – Tomorrow Pit Vipers and Spiders

By Tom Wall

BioWorld Today Contributing Writer

Rare Disease Therapeutics Inc., a Franklin, Tenn.-based company focused on developing orphan products, has won FDA approval for ***Anascorp***, the first specific treatment for a scorpion sting by Centruroides scorpions in the U.S.

It may well mark the end of two decades of relative anonymity for the privately held company, which has managed to fly under the biotech industry's radar despite having a couple of approved orphan products.

That's because with the approval of ***Anascorp***, Rare Disease Therapeutics has the first in what could be a series of products that treat the victims of stings, strikes and bites by terrifying yet fascinating creatures that humans love to fear – even if the odds of being stricken are pretty long.

We're talking about a pipeline of treatments for run-ins with rattlesnakes, copperheads, cottonmouths and coral snakes, not to mention black widow and brown recluse spiders.

Although most venomous scorpions in the U.S. are found in Arizona, infants and children are the most frequent victims of stings and untreated cases can be fatal, according to the FDA.

Milton Ellis, president and founder of Rare Disease Therapeutics, told *BioWorld Today* that the scorpion and other antivenom programs got started about 12 years ago when his company licensed several antivenom products from Instituto Bioclon SA de CV, of Tlalpan, Mexico, for the purpose of developing and marketing them in the U.S.

The scorpion program picked up momentum in 2003 when the supply of antivenom used throughout Arizona was about to run out. That supply had been made by a retired Arizona State University immunology researcher who injected goats with scorpion venom, then drew blood that was purified and given to victims. But many patients experienced allergic reactions to the goat protein. Instituto Bioclon's ***Anascorp*** is made from the plasma of horses immunized with scorpion venom and then treated to remove proteins that could cause an allergic reaction.

Anascorp was designated an orphan drug and received priority review. Even so, the process was long and slow. Clinical trials began in 2004. By the time the Phase III trial was completed in September 2010, more than 1,500 patients had been treated with ***Anascorp*** at 27 different hospitals.

There was also the matter of getting Instituto Bioclon's manufacturing facilities to measure up to FDA standards.

"We had to bring the Mexican plant up to speed," Ellis said. "It had to be inspected and updated, but I think most of it involved meeting FDA specifications for record keeping."

If not the first, ***Anascorp*** is one of the first biologics manufactured in Mexico and approved by the FDA, Ellis said.

While in Mexico scorpion stings can number in the tens of thousands annually, Ellis estimated there are only about 800 scorpion stings a year in the U.S. that are serious enough to require the antivenom. He estimates the U.S. market potential for ***Anascorp*** at about $5 million.

But Ellis expects that clearance of the Mexican manufacturing facility could make it easier to win FDA approval for Anavip, the pit viper antivenom candidate used in the treatment of envenomation by Crotaline snakes such as rattlesnakes, copperheads and cottonmouths in the U.S. Ellis estimated that as a $30 million to $40 million annual U.S. market opportunity.

Anavip is currently in an ongoing Phase III trial, and literally waiting for enough snakebite victims – about 120 total – during the warm-weather snake season to complete the study and submit results to the FDA in 2012 or 2013.

"The snakes have to cooperate, or you do not get patient accrual," Ellis observed.

Also in Phase III, but perhaps three to four years away from completion, is a trial of Analatro antivenom to treat black widow spider envenomations. Ellis estimated the U.S. black widow market at $10 million to $12 million annually. Farther back in the pipeline are similar antivenoms for coral snakes and brown recluse spiders, he said.

But Rare Disease Therapeutics isn't just about treatments for problems caused by things that creep and crawl.

Since 2002, the company has marketed in the U.S. Orfadin (nitisinone), which it licensed from Swedish Orphan International AB, for treatment

of Hereditary Tyrosinemia Type 1, an extremely rare disorder afflicting fewer than 500 children worldwide and fewer than 100 in the U.S. Frequent symptoms include hepatomegaly, edema, ascites, melena and hemorrhagic diathesis, and left untreated, it is fatal in the first year of life, the company said.

In 2007, Rare Disease Therapeutics licensed Cystadane (betaine anhydrous for oral solution), a prescription drug that is the first agent for the treatment of homocystinuria, a rare genetic disorder, from Orphan Europe, which is part of the Recordati Group.

Rare Disease Therapeutics was founded as Orphan Pharmaceuticals USA Inc. in 1991 by Ellis and several partners. The name change came about 10 years later as a way to differentiate it from a competitor, Ellis said. Today the company has 11 employees at the Franklin headquarters and locations in San Diego, Arizona and Buenos Aires, Argentina.

BioWorld Today August 5, 2011