

The Therapeutic Uses of Cobra Venom Neurotoxins

An Interview with Paul F. Reid, PhD

Paul Reid, PhD, is a leading world expert in the therapeutic use of snake venom neurotoxins. He is a co-founder and the CEO of ReceptoPharm, a Nutra Pharma drug discovery company. We talked to him about his recently published article "*Cobra Venom: A Review of the Old Alternative to Opiate Analgesics*" and other medicinal properties of cobra venom.



You have written that the use of cobra venom in medicine dates back to the 1830s.

Which illnesses were treated with cobra venom back then?

The medicinal properties of cobra venom were first introduced in Western medicine by German-born homeopathic physician, Constantine Hering. He wrote a book entitled *Effects of Snake Poison* in 1837. Cobra venom has been used for many years by the Chinese to treat opium addiction and by Indians who combine it with opium to treat pain. It was once even thought to be an aphrodisiac. Up until the early 1900s it was used for depression, back pain, menstrual pain and headaches among other ailments.

Was there a specific natural event that initially led scientists to believe cobra venom could be effective in treating pain?

In the early 1900s a doctor by the name of Adolf Monaeleser was visiting Cuba. He came across a leper who was bitten by a spider and who claimed that the venom relieved the pain. Fascinated by this, Dr. Monaeleser started doing research and discovered through other experts at that time that cobra venom had more neurotoxic properties than spider venom. In the 1930s and 1940s Pharmacologist David Macht conducted extensive research into the applications of cobra venom injections to treat pain. His Company made Nyloxin and it found its major application to the treatment of pain associated with cancer and rheumatoid arthritis, particularly when all other remedies failed. His dosage recommendations remain the perceived standard today, as many clinical trials have been done on his scientific findings.

So the historic findings of 70-80 years ago regarding the usage of cobra venom remain valid today?

Yes, we follow the basic protocol of David Macht's research and dosage recommendations in the active ingredients of Cobroxin® and Nyloxin™. There have been many clinical trials conducted with cobra venom over the years as an analgesic. The results consistently indicate that approximately 70% of patients who use the drug receive some anti-inflammatory and analgesic benefits from cobra venom.

How did you first get interested in studying the science of cobra venom?

When I was working toward a PhD in Neurobiology I did research on the effects of neurotoxins on nerve function. Among the neurotoxins I studied were isolated from bee and snake venom.

What exactly is a neurotoxin?

A neurotoxin is simply a compound that has an effect on the functioning of the nervous system.

Venom contains proteins and peptides. What is a peptide?

A peptide, comprised of two or more amino acids, is a standard term for a small protein or a piece of a larger protein. Cobra venom naturally contains large quantities of these small proteins. They have highly specific receptor-binding characteristics that are valuable in treating disease.

Cobra venom is a homeopathic drug. Can you explain the term “homeopathy”?

The simple concept of homeopathy is that one might be able to assess the therapeutic utility of a chemical compound by giving it in increasing doses to a healthy person to observe what effect, if any, that compound has on the person. The belief is that if the chemical causes a specific symptom in that healthy person, then it may be used at a non-toxic dose to treat that symptom. Cobra venom causes neurological toxicity in a healthy person, so it was used homeopathically to treat neurological conditions. Homeopathic drugs are diluted to the point where they are no longer toxic.

If venom is diluted in the homeopathic manner as you describe, how can it be strong enough to work effectively as a pain blocker?

This is a critical point of note in homeopathy and refers to the potency of the drug; high dilution equals high potency. If a chemical is diluted over and over again to an absurd number, common sense tells us that there cannot possibly be any medicinal value left in it. However, many drugs were used at low potency or low dilutions and many homeopathic physicians preferred using low potency formulations. Cobra venom was normally used at low potencies and is diluted enough to be non-toxic, yet still remain effective. The amount any specific chemical must be diluted depends primarily on its toxicity level and the symptom profile for a given potency. Cobra venom is diluted to the same range as reported in the homeopathic literature of the 1870s, and is similar to that as David Macht prescribed it in the 1930s. He researched it thoroughly, experimenting until the ideal safe, yet effective dilution was reached.

Can you give us a few examples of other homeopathic drugs?

Atropine, salicylic acid, quinine and Nux vomica (strychnine) were part of the homeopathic Pharmacopoeia. Morphine was also listed as a homeopathic drug, but transitioned into a prescription because it was commonly abused. Based upon the fundamental concept of “like treats like” the current use of viper and insect venom components as anti-inflammatory and blood regulating agents could be considered homeopathic. Botulinum (a.k.a. Botox), is a neurotoxin that causes paralysis. It is used in non-toxic doses to treat neuromuscular disease and pain (also used to reduce wrinkles) because it paralyzes muscles. It causes neurological symptoms in normal individuals and is applied to treat neurological conditions, thereby meeting the primary homeopathic tenet. Similarly for current protocols to induce tolerance to allergens, minute quantities of the antigen concerned are injected. In the 1800s, there was no knowledge of mechanisms of actions that define the application of drugs today, just a means to assess the physiological effects of potential drugs in healthy volunteers.

Is there a specific species of cobra that is used to make Cobroxin® and Nyloxin™?

In the US Homeopathic Pharmacopoeia (HPUS), the official standard for prescription and over the counter drugs recommends Asian cobra venom (*Naja tripudians*). This includes all species of cobra from the Middle East to the Philippines. The most readily available cobra venom is that of the Indian and Thai cobras. The King Cobra was always recognized as a distinct species and was not included in the HPUS. Analgesic agents have been isolated from this venom, though it is not used in our products. The original requirement was that venom used to treat pain must target the nervous system, so cobra venom is the ideal choice.

Are cobras found in the US?

No, cobras are not naturally found in the Americas.

How is the venom safely extracted and contained from the animal?

Cobras are safely kept in cages. When the snake is removed from the cage, a press stick is used to hold the snake's head so a worker can safely get his hands behind the animal's head to guide it. The snake bites into a funnel covered with a membrane and spits out a small amount of venom. That venom is collected in a container attached to the funnel and is quickly freeze-dried to preserve its biological properties. The process of extracting venom is called "milking." Reptile World in Kissimmee, FL or Kentucky Reptile Zoo in Slade, KY have shows every day demonstrating the extraction of venom from snakes. It's a great way for people to observe the process. Kentucky Reptile Zoo (KRZ) also has videos on YouTube, like this one.

How often can one snake produce venom?

About once every two weeks for cobras.

How much venom do cobras produce?

10,000 cobras will produce one kilo (approx. 2.2 lbs.) of venom in a 4 to 6 week period.

How long can one snake produce venom for the cobra farm and how long does a cobra live?

A cobra can begin to be milked when it is two years old. The average captive cobra lives about 15 years and keeps producing venom for the duration of its life.

Does extracting venom or breeding cobras hurt the snakes in any way?

No, milking and breeding are safe for the animals. We have strict standards to ensure that the cobra farms used for breeding and milking practice proper animal husbandry.

How often do cobras reproduce?

A Thailand cobra reproduces once per year, laying approximately 20 eggs at a time.

Are cobras a threatened species?

Some species are listed as endangered. Farms need special permits to breed and care for cobras for export. This is why it is so crucial that proper animal husbandry be followed.

What is the danger to a human who is bitten by a cobra?

Cobras, like other snakes, bite in defense and may not inject venom every time. In fact about 50% of the time the cobra's bite is dry. If it does inject its venom, the victim's nervous system will be compromised, so he or she has about 20-30 minutes to get to a hospital for anti-venom treatment. Without treatment, the average person will die in about 4 hours. Fortunately if the anti-venom is administered, it is unusual for a person to die from the bite.

What side effects can occur with the use of cobra venom in medicine?

It depends on how it's administered. Topical solutions such as gels produce few side effects. Oral solutions induce headaches or stomach upset in some patients. We have had one person report hives – an allergic reaction – from using the Nyloxin™ oral spray. If the neurotoxins of cobra venom were to be administered in higher quantities via injection, as they were in the 1930s, there would be an increased chance of negative side effects.

Why do you think the abuse of prescription painkillers has become such an epidemic in recent years?

Because they are addictive, prescription painkillers were designed for short-term treatment only. These drugs have been overprescribed by doctors because they are readily available. The US has the highest consumption of opiates in the world. Also, pain is subjective and it is difficult for healthcare practitioners to determine one patient's level of pain as compared to another. Many doctors are not aware that there is a potentially safe and effective alternative to the long-term use of opiates. Cobra venom is a safe, non-addictive way to treat pain, but the full benefits are not immediate; it takes time and consistency and is best used to treat chronic, rather than acute pain.

So can Nyloxin™ be safely used in conjunction with prescription painkillers?

Yes, the prescriptions can be used for a short term while the Nyloxin starts to kick in. It takes a couple of days to 2 weeks to get the full effects of Nyloxin™. It works best when taken regularly over time.

Are you saying that with regular use Nyloxin™ can be used in place of prescription narcotics to treat pain?

Opiate-based drugs remain the standard for treating moderate to severe pain, in spite of their shortcomings. However, cobra venom is a readily available resource with an impressive safety record and observed response rate. The research that has been conducted regarding cobra venom peptides and their analgesic properties suggests that cobra venom is a favorable alternative to opiates in treating pain. Controlled clinical studies to modern standards would help confirm this further.

Does cobra venom offer any other medicinal benefits other than being an analgesic?

Because it is an anti-inflammatory, cobra venom has the potential to slow down the degeneration of joints as in Rheumatoid Arthritis. It also reportedly has anti-depressive activity. At ReceptoPharm we are currently doing research on Herpes, HIV/AIDS, Multiple Sclerosis and ALS using cobra venom and its constituents.

**Dr. Reid, you have certainly given us a great deal of valuable information today.
Thank you for taking the time to share your expertise with us.**

Dr. Paul F. Reid has a PhD in Neurobiochemistry from Imperial College in London, England. He received his Bachelor's Degree in Microbiology from Trinity College in Dublin, Ireland.