

# Ivermectin

## *The 3rd Wonder Drug*

*By Shannon Ott*

Ivermectin is a common household name for livestock and pet owners alike all over the world. I am positive nearly everyone reading this has not only heard of the drug, but at some point have used it for their pets (or maybe themselves), but what you probably are not aware of is that ivermectin is considered one of the “wonder drugs”, along with penicillin and aspirin, and has been used to treat some of the most serious parasitic diseases in the world.

Ivermectin is a popular dewormer used by many horse, dog, and livestock owners. It has become a hot topic in recent news as cases of ivermectin shortages and overdoses have become more common due to the proposal that it could be a potential treatment for Covid-19. While ivermectin has not been approved for this purpose, it has been used for treatment in humans for many other illnesses including some very dangerous parasitic diseases that ravage poorer countries.

Ivermectin was discovered by random chance in Japan by microbiologist Satoshi Ōmura in the 1960s. Ōmura collected random soil sample and cultured them in the hopes of discovering new bacteria with medicinal properties. In one of the samples collected near a golf course *Streptomyces avermitilis* was found. The sample was sent to the Merck Research Lab in New Jersey where veterinary scientist and zoologist, William Campbell quickly discovered the new bacteria could be used against parasites in animals. The active component was known as avermectin, and then the chemically modified version became known as Ivermectin. By 1981 Ivermectin was commercialized as a vet product and soon became the top selling veterinary drug in the world. In 1987 Ivermectin began to be marketed as a heartworm prevention in dogs called Heartgard which has now become one of the most widely used products in the world.

William Campbell insisted ivermectin be looked at to treat Onchocerciasis (River blindness) in humans. River blindness occurs in 31 countries in Africa, Yemen, and a few Latin American Countries; it occurs in a parasitic worm called *Onchocera volvulus* and is transmitted through the bite of the blackfly. Symptoms become more serious as the infestation increases in the host with blindness being one of the most serious of the symptoms. Onchocerciasis is one of the leading causes of preventable blindness in the world. In 1988 studies for treatment of River blindness proved to be effective, and ivermectin became approved for the use of humans under the drug name Mectizan. Merck CEO P. Roy Vagelos pledged the company would donate as many doses as long as it was needed to eradicate the disease, and a partnership between several organizations known as the Mectizan Donation Program (MDP) was created. Today more than 250 million people worldwide are receiving life changing doses of Mectizan, and more than 2 billion doses have been administered since the 1980s. Despite 30 years of treatment, and billions of doses there is no evidence of the parasite that causes River blindness to be building a drug resistance. The goal of the MDP is to treat and eradicate not only River Blindness, but also lymphatic filariasis (elephantiasis) another parasitic disease that causes the swelling of limbs, breasts, and genitalia.

In 2015 Ōmura and Campbell’s amazing discovery received the Nobel Prize in physiology and medicine. The discovery of avermectin led to the overall benefit of the world, not only through the treatment of parasitic diseases in humans, but also through furthering global food production. Livestock used in all facets of food production are being treated for worms and ivermectin is included in many of those protocols.

Ivermectin is one of the most common drugs used by horse owners, and so many of us have no idea the impact that the medicine has had on the world. Even today, ivermectin is being looked into as a new treatment for malaria, and continues to impact the world.

