

## M-Worm Description by Ruthanne McCaslin, DVM

When an alpaca ingests the M-worm larvae, the larvae penetrate the gut wall and begin a journey through the tissues towards the spinal cord. It takes a little over 30 days for the larvae to reach the spinal cord. The brain and spinal cord are protected by tough outer membranes called the meninges. This is where the blood/brain barrier takes place as well.

The blood/brain barrier is a feature of the circulatory system that stops many chemicals from entering the Central Nervous System (CNS). Ivermectin and Dectomax are two of the chemicals that cannot pass the blood /brain barrier. That is why we have to give those drugs during the 30 day window when the larvae are in transit between the gut and the meninges. This means we are killing all the larvae the alpaca has eaten in the PAST 30 days, not protecting her for the next 30. This is why even the Dectomax must be given every 30 days. It is determined by the transit time for the larvae. Once the larvae have passed through the meninges into the spinal cord the ivermectin/Dectomax will no longer be able to reach them and kill them.

SafeGuard/Panacur CAN pass through the blood brain barrier which is why it is used for TREATMENT of m-worm instead of Ivermectin. In some cases of m-worm disease the meninges are so badly damaged by the larvae that the blood/brain barrier breaks down and allows substances to enter which would normally be excluded - including ivermectin. Perhaps this sounds like a good thing because the Ivermectin can then get in to kill the larvae. The problem is that Ivermectin and Dectomax are toxic to the delicate CNS tissues and will make the problem worse instead of better. Some of the older protocols for m-worm TREATMENT still call for Ivermectin, but they are incorrect.

Ivermectin and Dectomax should never be used in animals showing symptoms of m-worm disease - weakness, usually starting in the rear legs, difficulty standing and walking, proceeding to complete inability to stand. Once they are "down" it is very hard to save them. Prevention is MUCH easier and much less expensive than treatment.

Now back to Ivermectin vs. Dectomax. When you give a dose of ivermectin it is absorbed very quickly, it reaches peak blood and tissue levels in 24 hours and is nearly all gone by 48 hours. Get in, hit 'em hard and get out. Just what you want it to do. It very quickly kills all the m-worm larvae that were eaten in the last 30 days and very quickly leaves the body. IF you are using your alpaca manure for organic gardening you only need to exclude it for a few days post treatment til all the Ivermectin is gone. When you give a dose of Dectomax it is absorbed very slowly. It takes 10-12 days to reach peak blood and tissue levels. Even then the peak level reached is only about 2/3 of the peak level from the same dosage of Ivermectin. To achieve the same blood level you have to increase the dosage considerably. Once the Dectomax peaks it is very slowly removed from the body over a period of 4 weeks or more. There is never any time when Dectomax is not being excreted in the manure which can make it unsuitable for some uses. There is some anecdotal evidence that Dectomax stings less, but I have not observed that. I have never found Ivermectin to be a particularly irritating drug. Based on animal reactions I would say it stings a lot less than Banamine. Dectomax costs a lot more than

Ivermectin and it is less effective. I have no use for it. But if you use enough of it (1ml/50#BW) and use it every 30 days it will prevent m-worm.

Which brings us to very dangerous practice of switching back and forth between Ivermectin and Dectomax every month. If you use Dectomax every month even though it takes a long time to peak if you give it every thirty days it will peak at thirty day intervals and your animals will be protected. If you give Ivermectin which peaks in one day and 30 days later you give Dectomax which peaks in 10-12 days the two peaks will be 40 days apart instead of 30. That will give the larvae an extra 10 days to reach the meninges. Please do not do that. I hope this explanation has been clear.

If not let me know and I will try to do better. This is such an important subject for you to understand.

By the way m-worm is only a problem in the eastern half of the US, though it is slowly making its way west. Those of you out west and on other continents can be very happy you do not have to deal with this.

Note:

- \* M-Worm is an abbreviation for Meningeal Worm. *Parelaphostrongylus tenuis*, more commonly known as brain worm, is a nematode (roundworm) parasite of several species of hooved mammals. It is normally carried and spread by white tailed deer. Causes death in llamas and alpacas.
- \* Three layers of membranes known as meninges protect the brain and spinal cord.
- \* Ruthanne McCaslin is a veterinarian in Ohio and owns an alpaca farm.