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Efficacy of Selamectin against roundworms in dogs

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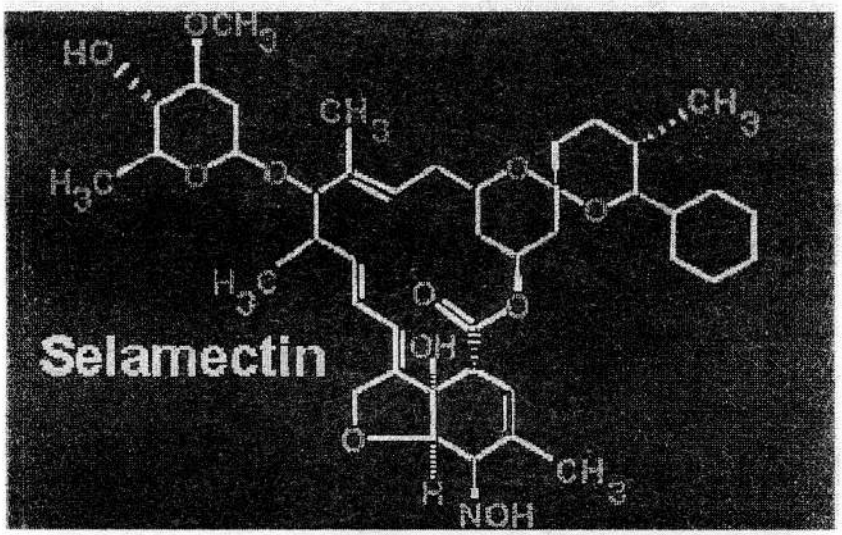
Selamectin one of the latest member of Avermectins is very succeful in the treatment of Toxocara canis and Toxascaris leonine, and is very easy to use it, with safety and with efficacy on other dog's parasites as well.

Selamectin is produced as a fermentation product of *Streptomyces avermetilis* which is then chemically modified. (1, 2).

Selamectin is a modified avermectin with the chemical name (5Z,25S)-25-cyclohexyl-4-0-de(2,6-dideoxy-3-0-methyl-abino-hexopyranosyl)-5-demothexy-25-de(1-methylpropyl)-22,23-dihydro-5-hydroxyminoavermectin A1a. The molecular weight is 770,0.



Selamectin increased the release of gama-aminobutiric acid (GABA) from the synaptosomes of the nervous system. This, in turn, opened GABA-gated chloride channels. Selamectin , like the others macrocyclic lactones bind selectively and with high affinity to glutamate-gated chloride ion channels in invertebrate nerve and muscle cells. Selamectin causes hyperpolarization of the resting potential postsynaptic cells.

Selamectin interferes with chloride channel conductonce causing disruption of normal neurotransmission. This inhibits the electrical activity of nerve cells in nematodes leading to their paralysis.

After topical administration, selamectin is absorbed from the skin reaching maximum concentrations approximately 3 days after application (3).

After administration on the skin, selamectin is distributed systemically and is slowly eliminated from the plasma with detectable plasma concentrations in 30 days.

The terminal half-life is longer after topically administration than after intravenous, which suggest sustained release from an extravascular depot. The half-life after topically administration is 11 days.

The topical bioavailability in dogs is only 4%.

It has activity against nematodes and arthropods (1, 2): Toxocara canis, Toxascaris leonina, Ancylostoma caninum, Uncinaria stenocephala, Dirofilaria immitis larvae (4), Ctenocephalides sp. The approved topical dose is minimum of 6,2 mg/kg for dogs.

The safety of selamectin was evaluated by treating puppies with up to six weeks of age. Selamectin is very safe drug because doses of 114mg/kg at 28-dayintervals for a total of seven treatments, and no adverse reactions were observed.

The drug was administered at 10 times the recommended dose, and no undesirable effects were observed.

The drug was administered at 3 times the recommended dose to dogs infected with adult heartworms and no undesirable effects were observed.

The drug was also administered at 3 times the recommended dose in breeding male and female dogs, including pregnant and lactating females nursing their litters at 5 times the recommended dose to ivermectin sensitive collies-dogs, and no undesirable effects were observed. Is safe for use in breeding dogs (1, 2).

Administered to pregnant bitches at 40 and 10 days prior to parturition and 10 and 40 days post-parturition reduced transplacental and lactogenic transmission to puppies (5). Should not be stored in temperatures above 30°C, and must be stored in the unopened foil package in a dry place.

My research, occur 17 dogs (10 males, 7 females), seven weeks to 9 years of age, whom was identified by fecal examination (naturally infected) positive for Roundworms.

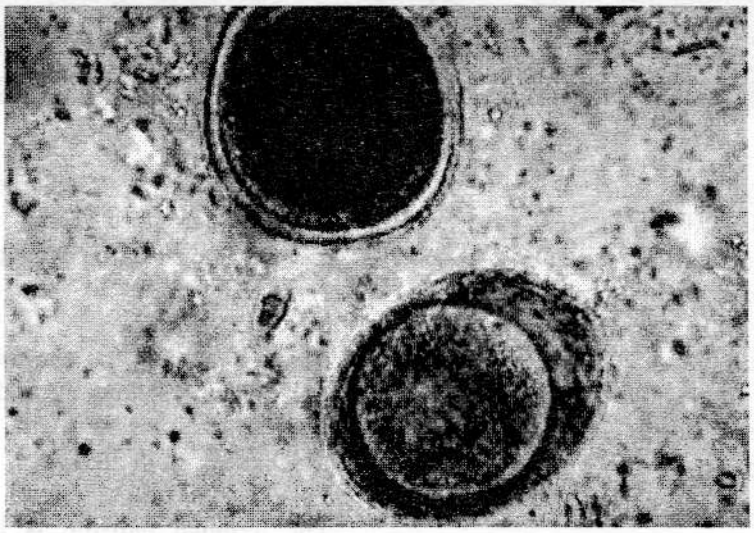
Dosage of Selamectin: 6 mg/kg.

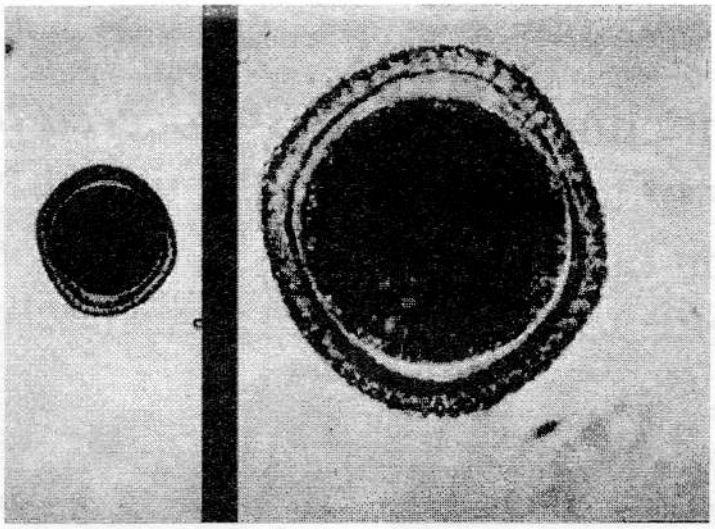
Route of administration: topicaly.

Frequency of administration: once a month for 2 doses.

Duration of study: 60 days.

Parameters measured, was assessed on the basis of presentation, Roundwarm eggs, in fecal samples collected from each dog.





The fecal examination was based in a diagnostic system Fecalyzer (Fecal Examination of EVSCO PHARMACEUTICALS, USA) with the technique of flotation. According to this method, a diagnostic system is used for a feces sample. We collect with the interior, between the two devices of the system, 1cm3 feces. We place it in the bigger one. We pour the flotation solution (Fecasol: Stable solution of sodium nitrate, with stable special gravity 1,2). We rotate the interior device right-left in order to mix the sample with the flotation solution and to separate the eggs of the parasites from the rest feces mass. We add the solution in order to form a meniscus. We place a tent on its surface. The eggs will float while the feces remains on the bottom part of the pot. After 15-20 min., the tent is placed in a carrying plate and is examined by the microscope.

After 60 days, and two topical applications, monthly, with dose 6 mg/kg,

None fecal sample, examined by the flotation method was finding to contain Toxocara canis or Toxascaris leonine eggs, and with other words all dogs are eliminated from naturally infected roundworms parasites.

References

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