Antiparasitic Agents:-

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INTRODUCTION of Anthelmintic :-

ANTICTESODAL DRUGS:-

1-Praziquantel.
2-Niclosamide.
3-Benzimidazole.
4-Arecoline hydrobromide.
5-Dichlorophen.
6-Nitroscannate.

Introduction

These agents kill tapeworms and are called taeniacides,

1-Paraziquantel:-

Therapeutic uses.

Praziquantel is a highly effective broad- specrum antihelminthic drug that was introduce against all species of tapeworms and kill both adult and juvenile stages of the worms. However, its activity against hydatid cysts is erratic. It is also available in combination with pyrantel pamoate, ivermectin, and moxidectin to kill nematodes.

Mechanism of action.

The mechanism of action of the drug apparently disrupts Ca^{2+} homestasis in the parasite by binding to consensus protein kinase C-binding sites in a β subunit of worm voltage gated calcium channels .this is induces an influx of the ion ,a rapid and prolonged contraction of the musculature ,and eventual paralysis and death of the worm.

Administration

a. Praziquantel is approved for dogs, cats, and horses, and has been used in other animals.

b. Praziquantel is administered orally or SC. Fasting before oral administration is not necessary.

Pharmacokinetics

a. Absorption. Praziquantel is completely absorbed within 2 hours of oral administration.

The information is not available for absorption from the injection site.

b. Distribution. It is distributed throughout the body, including the CNS.

Metabolism and excretion. Praziquantel is metabolized to unknown compounds in the liver via cytochrome P450 and is excreted primarily in the urine.

The elimination $t1/2$ is ~3 hours in dogs. No information is available for other species.

Adverse effects. Praziquantel is the safest anticestodal drug available.
a. Overdose induces anorexia, vomiting, salivation, diarrhea, and lethargy in <5% of animals.

b. It exerts no teratogenic or embryotoxic effects.

2- Niclosamid

Niclosamide:- is a medication used to treat tapeworm infestations. This include taeniasis.

It is not effective against other worms such as pinworm or roundworms. It is taken by mouth.

Mechanism of action:-

Niclosamide inhibits glucose uptake, oxidative phosphorylation, and anaerobic metabolism in the tapeworm, and anaerobic metabolism in the tapeworm.

Side effect:-

Side effects include nausea, vomiting, abdominal pain, constipation, and itchiness. It may be used during pregnancy and appears to be safe for the baby, Niclosamide rarely, dizziness, skin rash, drowsiness, perianal itching , or an unpleasant taste occur.

Withdrawl Period:
Sheep: 28days,cattle :28 days
Dosage:
Orally--each **1**kg body weight needs:
cattle: 40-60mg
Sheep:60-70mg**.**

3-Benzimidazoles.

Fenbendazole, oxfendazole, and albendazole:-
are effective against mature Taenia and Echinococcus in dogs and cats , and Moniezia in ruminants. They may kill intermediate hydatid cysts of Taenia in infected cattle and sheep.

4-Arecoline hydrobromide.

Arecoline hydro bromide is used in the treatment against tapeworms infection in dogs. Echinococcus infestation in dogs can also be treated with it.It has been observed that it is effective against infections of Taenia pisifortnis, T. hydatigena, T. ovis, T. multiceps and E. granulosus in dogs.

The Echinococcus are eliminated intact and live. However, for complete elimination of Echinococcus, more efficacious recent drugs like praziquantel should be used.

Mechanism of Action:

The Arecoline paralyses worm musculature till the worms looses its attachment to the intestinal mucosa of the host. Besides this the arecoline hydro bromide increases the peristalsis so that detached worms are removed from G.I. tract.

As arecoline produces paralysis for a brief period, worms affected may recover and again make attachment with intestinal wall, if purgation, due to the local action, (due to its cholinergic effect) has not occurred within 2 hours of its treatment. In such cases saline purgatives are recommended.

Pharmacokinetics:

Tablets are absorbed readily from the stomach and the drug enters into portal circulation and is rapidly metabolised in the liver. It shows minimal signs of toxicity. It is also absorbed through oral mucosa when given in solution. In this case, systemic absorption is greater and signs of toxicity are more likely to occur.

Dose: Dogs 1mg l kg orally.

Toxicity:

Discomfort, incidencaae of vomiting and unconsciousness with high doses in dogs are observed. In some cases, vomiting and catharsis is noticed even after a therapeutic dose is given. Administration of a high dose i.e. 44 mg/kg in dogs shows symptoms of discomfort and convulsions.

During toxicity produced by Arecoline hydro bromide in dogs, atropine sulfate at the dose of 0.44 mg/kg is advised. Atropine does not show any

effect on the paralyzing property on the worm musculature produced by arecoline hydro bromide.

Contraindication:

Arecoline is not advised in cats due to excessive bronchial secretion that may produce suffocation.

5-Dichlorophene

Therapeutics uses. Dichlorophene is used to treat Taenia and Dipylidium infestations in dogs and cats.
Its efficacy against Echinococcus is variable.
Administration. Dichlorophene is best given orally after an overnight fast.
Mechanism of action. Dichlorophene causes uncoupling of oxidative phosphorylation to deplet ATP from tapeworms and disrupts the PH difference across the external tegumental membranes.
Adverse effects. Vomiting and diarrhea may be seen after dichlorophene administration.

6-Nitroscannate.