**ANTI- PROTOZOAN DRUGS**

**Protozoa are responsible for the following animal diseases:**

* Coccidiosis
* Giardiasis
* Cryptosporidiosis
* Trichomoniasis
* Babesiosis
* Toxoplasmosis
* Trypanosomiasis
* Leishmaniasis
* Amoebiasis

***Drugs effective against amaoebae & Flagellates***

**Metronidazole (Flagyl)**

* Tx poultry flagellates
* Currently used in veterinary medicine to treat canine, feline, and  equine giardiasis and bovine and canine genital trichomoniasis.
* It is metabolized in the liver and excreted mainly by the kidney.
* Urine may appear dark red due to the drug.

**Fenbendazole** is now the drug of choice for **Giardia**.

**Paromomycin (Aminosidine®)**

* + It is used to treat luminal **amoebiasis**, **leishmaniasis**, and **cryptosporidiosis**.

**Tetracyclines**:

* These are used as ***feed additives***
* Represent a broad group of antiprotozoal agents with activity against **amoeba**, **mucosal flagellates, coccidia, malaria, piroplasms** (tick-transmitted protozoans), and **ciliates**.

**Clindamycin**:

* The drug is readily absorbed orally (90%), and widely distributed in most tissues.
* The half-life is about 5 hours after oral or IV administration.
* This drug is considered the drug of choice for treating **toxoplasmosis** in **dogs** and **cats**.

***Drugs effective against coccidian***

* **Coccidiosis** is an enteric disease caused by **Eimeria** or **Isopora** spp.
* Coccidiosis is very important in the poultry industry, even though it accounts for economic losses that also in the cattle, sheep, goat, rabbit, and swine production industries.
* It also occur in dogs, cats, human, and other primates.
* Pig coccidiosis is a disease of nursing pigs 7 - 14 days old and anticoccidial medication of nursing pigs can be labor intensive as animals are not eating or drinking.
* **NO ANTI-COCCIDIAL AGENTS ARE APPROVED FOR PIGS**. Of the many commercially available and approved **anticoccidials**, **sulfonamides** and **polvether** **ionophores** are the **MOST** **FREQUENTLY** used.

**Sulfonamides**

Used in ruminants and small animals

E.g. are trimethoprim

* + - Ormetoprim
    - Diaveridine
    - Pyrimethamine (not approved for use in food animals)

WT: 5 days

**Decoquinate**

is approved in the US for treatment and prevention of coccidiosis in calves, beef and nonlactating cattle, sheep, goats, and poultry.

**Drugs effective against coccidia**

**Amprolium**:

* It is the only anticoccidial approved for layers. It is also approved for broilers, turkeys, and cattle. No withdrawal is required for poultry and 1 day WDT for cattle.
* Beware that an overdose can result in thiamine deficiency.
* **Roxarsone**:
* This arsenical drug is used primarily for its growth-promoting benefits, and is often used in combination with other drugs to enhance anticoccidial activity

Polyether Compounds

These drugs can be grouped into five different classes:

* monovalent,
* monovalent glycoside
* divalent
* divalent glycosides
* divalent pyrole ethers.

**Monensin (Coban®, Rumensin®)**

* Monovalent polyether ionophore that is approved for **cattle**, **goats**, and **chickens**  (not laying hens).
* WDT : 0 or 5 days

**Lasalocid (Avatec®)**

* Divalent polyether ionophore approved for **cattle**, **sheep**, and **poultry** against
* sporozoites, early and late asexual stages.
* WDT for this drug alone is 5 days.

**Salinomycin (Bio-Cox®)**

* Monovalent polyether ionophore that is approved for **chickens** (broilers only), and is effective against sporozoites, early and late asexual stages.
* No WDT is required

**Narasin (Monteban®)**

* Monovalent polyether ionophore that is approved only for **broilers**
* No WDT requirement

**Maduramicin (Cygro)**

* Monovalent monoglycoside polyether ionophore that is approved **only for broilers** with
* WDT : 5 days

**Semduramicin**

* Monovalent monoglycoside polyether ionophore approved for **broilers only**
* No WDT required

**Dog and cat coccidiosis**

* Associated with ***Nsospora spp***, and only **sulfadimethoxine** is approved by FDA.
* **Clindamycin** is the drug of choice for treating **toxoplasmosis** in cats and dogs

**Equine protozoal myeloencephalitis (EPM).**

* **Pyrimethamine** and combinations of **trimethoprim** and **sulfadiazine** have been used to treat EPM
* New drug called **Marquis (Ponazuril®)** was recently approved
  + Approved in the U.S. for treating EPM caused by ***Sarcocystis neurona***.
  + This drug should not be used in horses intended for food

***Drugs effective against Piroplasms***

**Babesiosis:**

* **Imidocarb (Imizol®)**
* **Amicarbalide (Diampron®)**
* **Diminazene diaceturate (Berenil®, Ganaseg®)**
* **Pentamidine isethionate (Lomidine®, Pentam 300®)**

**Phenamidine**