

ANTHELMINTICS

The term anthelmintic is restricted to drugs acting locally to expel parasites from gastro intestinal tract. There are several types of worms which penetrate other tissues, drugs which act on these parasitic infections are also known as anthelmintics. The worm parasites of man belong to two phyla: Nematelminthes (round- worms) and platyhelminthes (flatworms). The roundworms include hookworm, whipworm, pinworm *Strongyloides stercoralis*, *Trichinella spiralis* and *Wuchereria bancrofti*.

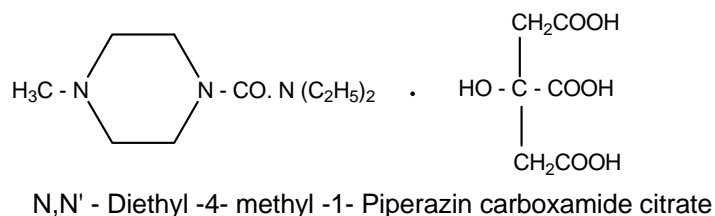
CLASSIFICATION

Anthelmintics are classified based upon their chemical structures.

- i) Piperazines: eg. Diethylcarbamazine citrate, Piperazine citrate.
- ii) Benzimidazoles: eg. Albendazole, Mebendazole, Thiabendazole.
- iii) Heterocyclics: eg. Oxamniquine, Praziquantel.
- iv) Natural products: eg. Ivermectin, Avermectin.
- v) Vinyl pyrimidines: eg. Pyrantel, Oxantel.
- vi) Amide: eg. Niclosamide .
- vii) Nitro derivative: eg. Niridazole.
- viii) Imidazo thiazole: eg. Levamisole.

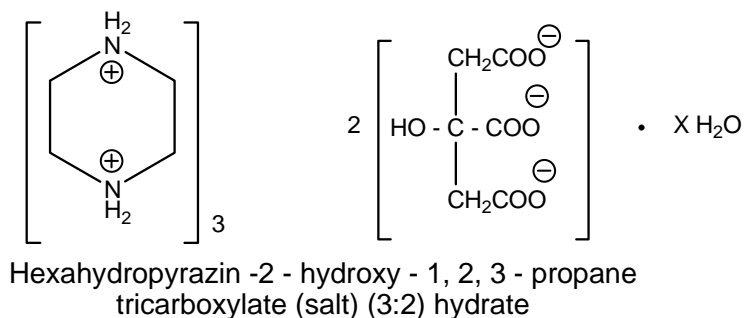
Piperazines

Diethylcarbamazine citrate



Use: It is the drug of choice for filariasis (*Wuchereria bancrofti*, *Brugia malayi*, *Acanthocheilonema perstans*).

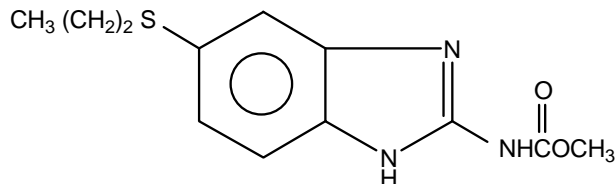
Piperazine citrate



Use: An anthelmintic used for the treatment of roundworm (*Ascaris lumbricoides*) and pin worm (*Enterobius vermicularis*) infestations.

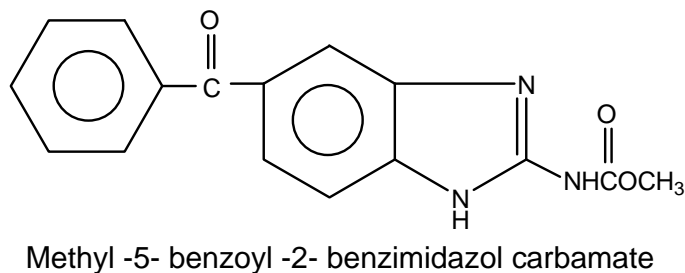
Benzimidazole

Albendazole



Use: It is a new benzimidazole useful in the treatment of intestinal nematode infection and echinococcosis. It is effective against roundworm, hookworm, whipworm and threadworm infestations. It is effective in the treatment of ascariasis.

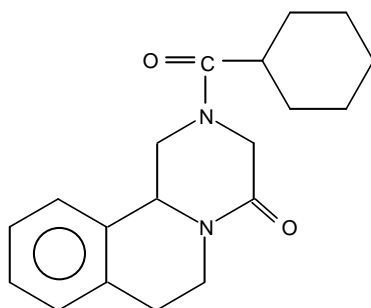
Mebendazole



Use: It is used in the treatment of hookworm, pinworm, roundworm and whipworm infestation.

Heterocyclics

Praziquantel



2-(Cyclohexylcarbonyl) -1,2,3,6,7,11b - hexahydro -4H - pyrazino [2,1-a] isoquinolin -4- one.

Use: It is considered as drug of choice for the treatment of *Schistosoma japonicum*, (blood fluke) fasciolopsiasis (intestinal flukes) clonorchiasis (chinese liver fluke) and opisthorchosis (liver fluke).

Natural Products

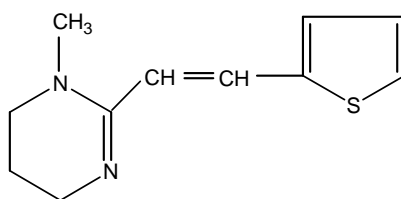
Ivermectin

Ivermectin is usually extracted from the soil of actinomycete *Streptomyces avermitilis*, the natural Ivermectins are 16- membered macrocyclic lactones, with broad antinematocidal activity. It is a mixture of 22, 23 - dihydro derivative of Avermectins B_{1a} and B_{1b}.

Use: Ivermectin is widely used in veterinary practice for the control of endoparasite and exoparasite in domestic animals. It is also used to treat onchocerciasis in humans caused by round worm *Onchocerca volvulus*.

Vinyl Pyrimidines

Pyrantel

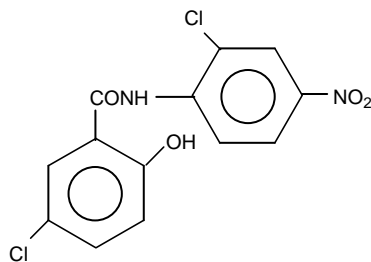


trans - 1,4,5,6 - tetrahydro - 1 - methyl -2- [2- (2-thienyl) ethenyl] pyrimidine.

Use: The anthelmintic choice in the treatment of hookworm, pinworm and roundworm infestations.

Amide

Niclosamide (Niclosan)



N - (2- Chloro -4-nitrophenyl) -5- chloro -2- hydroxybenzamide.

Use: The anthelmintic of first choice in the treatment of beef tapeworm, fish tapeworm, pork tapeworm and dwarf tapeworm infestations.