

Pancreatic Enzymes

- These medications contain digestive enzymes to help break down and digest fats, starch, and proteins in food.
- Extracts of hog pancreas.
- Used in conditions where the pancreas cannot make or does not release enough digestive enzymes into the small intestines to digest the food (e.g., chronic pancreatitis, cystic fibrosis, cancer of the pancreas, post-pancreatectomy, post-gastrointestinal bypass surgery).

Pancrelipase

- Available in sizes with different amounts of lipase, amylase and protease.
- Dose should be adjusted according to age, weight, degree of pancreatic insufficiency, and the amount of dietary fat intake.



Pancrelipase

- Taken with plenty of fluids.
- Used regularly to get the most benefit from it.
- Taken with every meal or snack.



Pancrelipase


- **Side Effects:**
- Diarrhea, constipation, headache, abdominal pain/cramps/bloating, gas, dizziness, cough, nausea, or vomiting.
- May cause mucositis if not swallowed quickly.



Bile Acid therapy for Gallstones

- **Ursodiol:**
 - Naturally occurring bile acid, from bears.
 - Absorbed in the g.i.t. and conjugated in the liver with glycine or taurine, and excreted in the bile.
 - Blocks hepatic cholesterol synthesis and thereby decreases secretion of cholesterol by the liver and the amount of cholesterol in bile
 - Also, stabilizes hepatocyte canalicular membranes.

Ursodiol

- **Clinical Uses:**
 - To dissolve small cholesterol gallstones in patients who refuse cholecystectomy or who are poor surgical candidates.
 - Prevention of gallstones in obese patients.
 - Early stage biliary cirrhosis.
 - Free of side effects.
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Antiprotozoal Agents

Metronidazole (Flagyl) Tinidazole

Penetrate protozoal and bacterial cells but not mammalian cells.

Work as an electron sink, so, reduced at 5-nitro group by the enzyme Nitroreductase, which is only found in anaerobic organisms.

The reduced molecule disrupts replication and transcription and inhibits DNA repair.



Metronidazole

Spectrum of Activity:

E. histolytica

G. lamblia

T. vaginalis

Blastocystis hominis

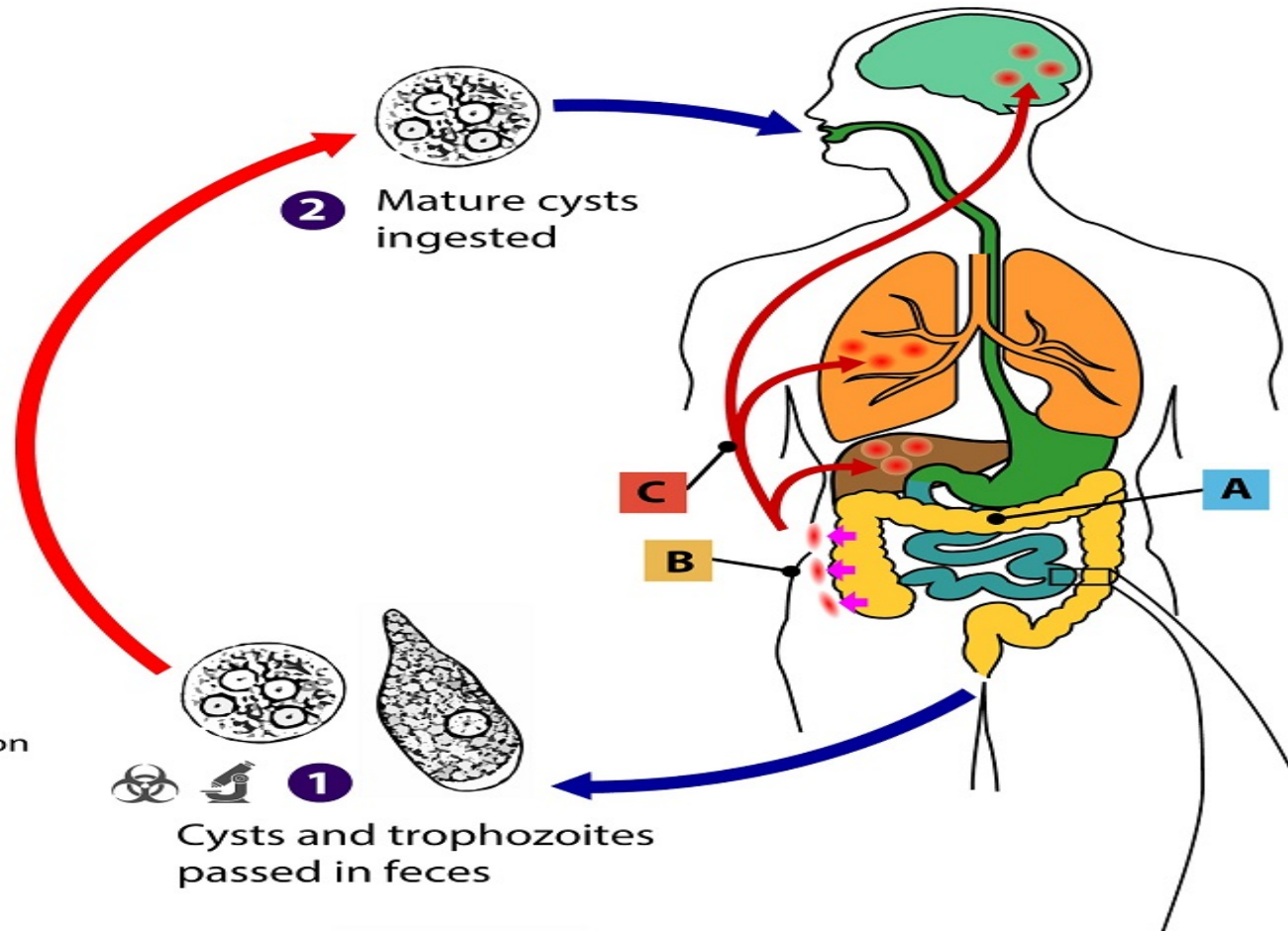
B. coli

Dracunculus medinensis

Also, anaerobic G+ve and G-ve bacteria

Resistance is rare.





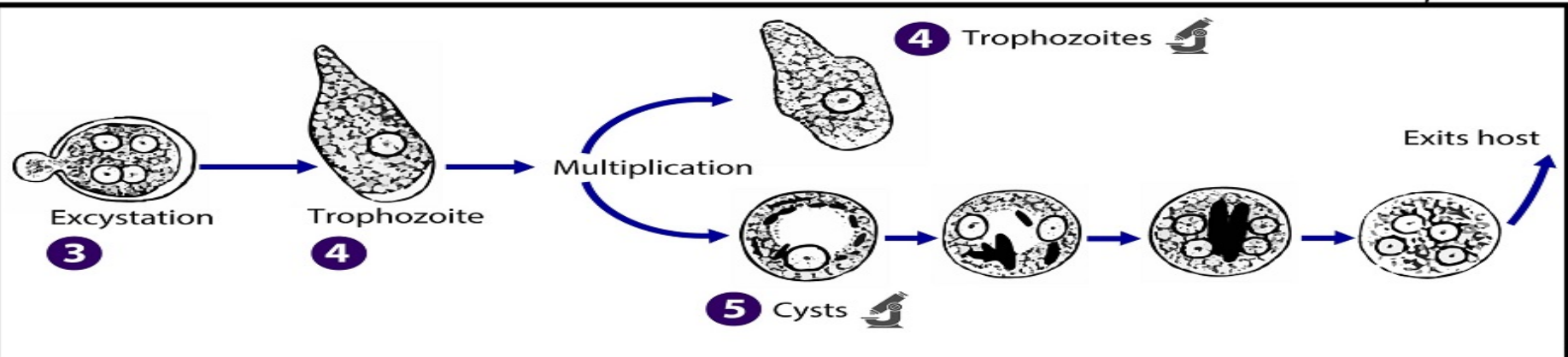
Infective stage

Diagnostic stage

A Noninvasive colonization

B Intestinal disease

C Extraintestinal disease



Metronidazole

Kinetics:

Good absorption and distribution,
 $t_{1/2}$ 8h.

Metabolized by oxidation and glucucuronide formation.



Metronidazole

Clinical Uses:

All forms of amebiasis, except for the cyst passers (Diloxanide Furoate, Paromomycin or diiodohydroxyquin).

Giardiasis.

- Trichomoniasis.

Anaerobic bacterial infection(in dentistry).

D. medinensis (guinea worm).



Metronidazole

Adverse Reactions:

Nausea, headache, dry mouth and *metallic taste*.

Urine discoloration.

Vertigo, unsteadiness, ataxia, paresthesia, neuropathy, encephalopathy.

Neutropenia.

Disulfiram-like reaction.

- Tinidazole is better tolerated.



Diloxanide Furoate

- Effective luminal amebicide.
- Mechanism unknown.
- Drug of choice for asymptomatic cyst passers.
- Flatulence, nausea, cramps, rashes.



Antibiotics

Erythromycin

Tetracycline

Alter bacterial flora and prevent secondary infection.

Paromomycin:

Aminoglycoside.

Direct action on ameba in the lumen.


Anthelmintic and for visceral leishmaniasis.



Anthelmintic Drugs

Albendazole:

Broad spectrum, which inhibits microtubule synthesis.

- Hydatid disease.
 - Cysticercosis: usually given with corticosteroids to decrease inflammation caused by dying organisms.
 - Pinworm.
 - Hookworm.
 - Ascariasis.
 - Trichuriasis.
 - Strongyloidiasis.
 - Others
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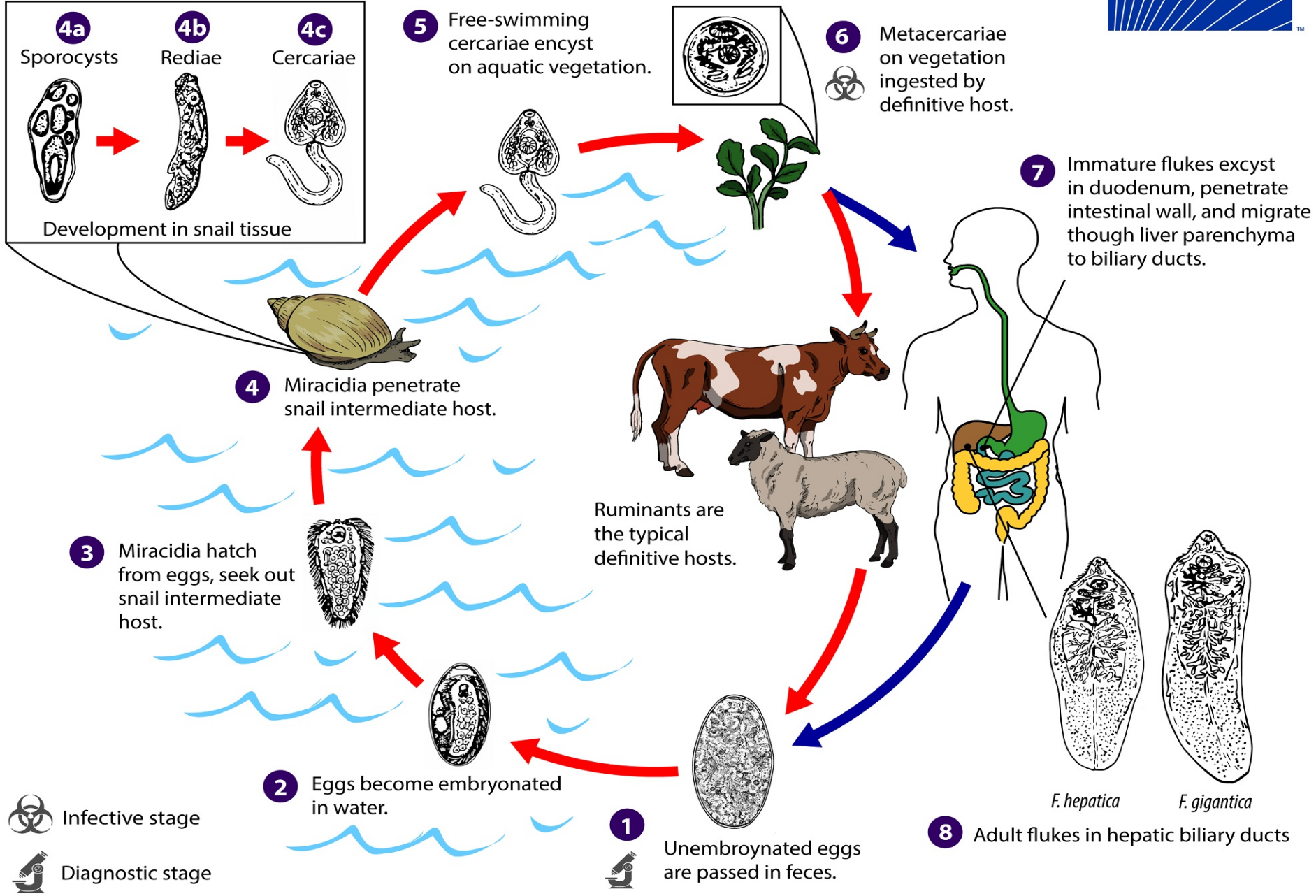
Anthelmintics

Bithionol:

- Drug of choice for Fascioliasis.
- Alternative drug for pulmonary paragonimiasis.



Fasciola spp.



Anthelmintics

Diethylcarbamazepine Citrate:

- Drug of choice for the treatment and prophylaxis of:

Filariasis: *W. bancrofti*, *Brugia malayi*, *B. timori*.

Loiasis: *Loa loa*.

Tropical eosinophilia: *Monsonella streptoceca*.

Immobilizes microfilaria and alters their surface structure, displacing them from tissues and making them susceptible to destruction by host defense mechanisms.

Anthelmintics

Doxycycline:

- *W. bancrofti*.
- *Onchocerciasis*.
- Works indirectly, by killing *Wolbachia*, an intracellular bacterial symbiont of filarial parasites.
- Used for treatment and mass chemotherapy campaigns.



Anthelmintics

Ivermectin:

Strongyloidosis:

Paralyzes nematodes and arthropods by intensifying GABA mediated transmission of signals in peripheral nerves.

- Onchocerciasis:

Blocks the release of microfilaria for some months after therapy.

Also effective in controlling scabies, lice, and cutaneous larva migrans.

Ivermectin

Mazotti Reaction:

Occurs in 5-30% of patients, usually mild.


Due to killing of microfilaria.

Fever, headache, dizziness, somnolence, weakness, rash, pruritus, diarrhea, joint and muscle pains, hypotension, tachycardia




Anthelmintics

Mebendazole:

- Wide spectrum.
 - Inhibits microtubule synthesis.
 - Ascariasis.
 - Trichuriasis.
 - Hookworm.
 - Pinworm.
 - Tablets chewed before swallowing.
 - Safe drug.
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Anthelmintics

Metrifonate:

- *Schistosoma haematobium*.
 - Not for *S. mansoni* or *S. japonicum*.
 - Organophosphate, inhibits cholinesterase, and thus paralyzes the worm, resulting in their shift from the bladder venous plexus to the small arterioles of the lung, where they are trapped, encased by the immune system and die.
 - Treatment.
 - Mass treatment programs.
 - Prophylaxis.
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Anthelmintics

Niclosamide:

Second-line drug for most tapeworm infections.

- Kills adult worms, but not the ova.
- Works by inhibition of oxidative phosphorylation.
- 2 gm single dose on an empty stomach, chewed and swallowed.
Purgative needed.



Anthelmintics

Oxamniquine:

- Alternative to praziquantel for the treatment of *S. mansoni*, not for the others.
- Worms are detached from terminal venules in the mesentery and transit to the liver, where they die.
- Also for massive treatment.
- Safe drug.



Anthelmintics

Piperazine:

- Ascariasis.
- Causes paralysis by blocking acetylcholine, worms expelled by normal peristalsis.

70 mg/day for 2-8 days.

Or, repeat after 2 weeks.



Anthelmintics

Praziquantel:

- Schistosomes, all species, drug of choice.
- Trematodes: Clonorchiasis, Opisthorchiasis and Paragonimiasis
- Cestodes including cysticercosis.
- Increases permeability of the worm to calcium, resulting in paralysis, dislodgment and death.
- Mild and transient adverse effects, except for neurocysticercosis.



Anthelmintics

Pyrantel Pamoate:

Broad spectrum:

Pinworm.

Ascaris.

Trichostrongylus orientalis.

Hookworms.

Effective within the intestinal tract, not in the tissues or against the ova.

Works as a neuromuscular blocker.

11 mg/kg, single dose

