

ANTI-AMOEBICS

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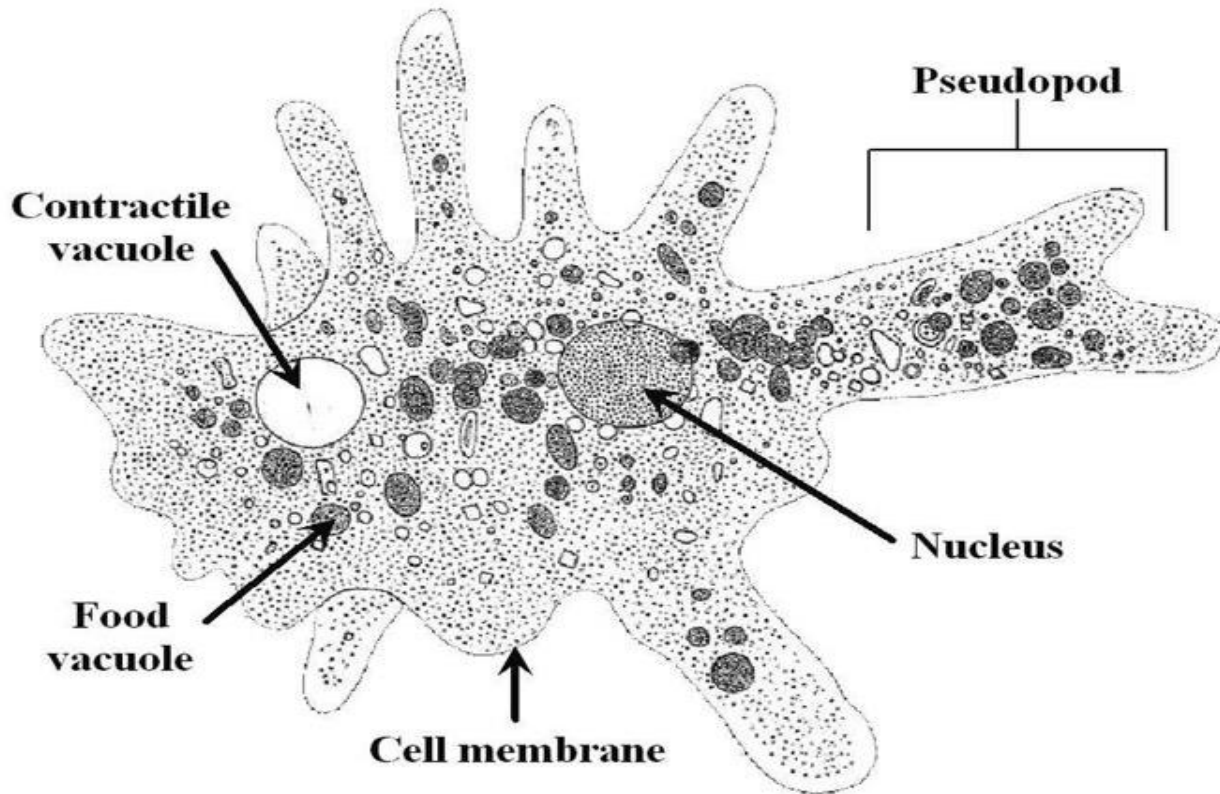
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ANTI-AMOEBICS

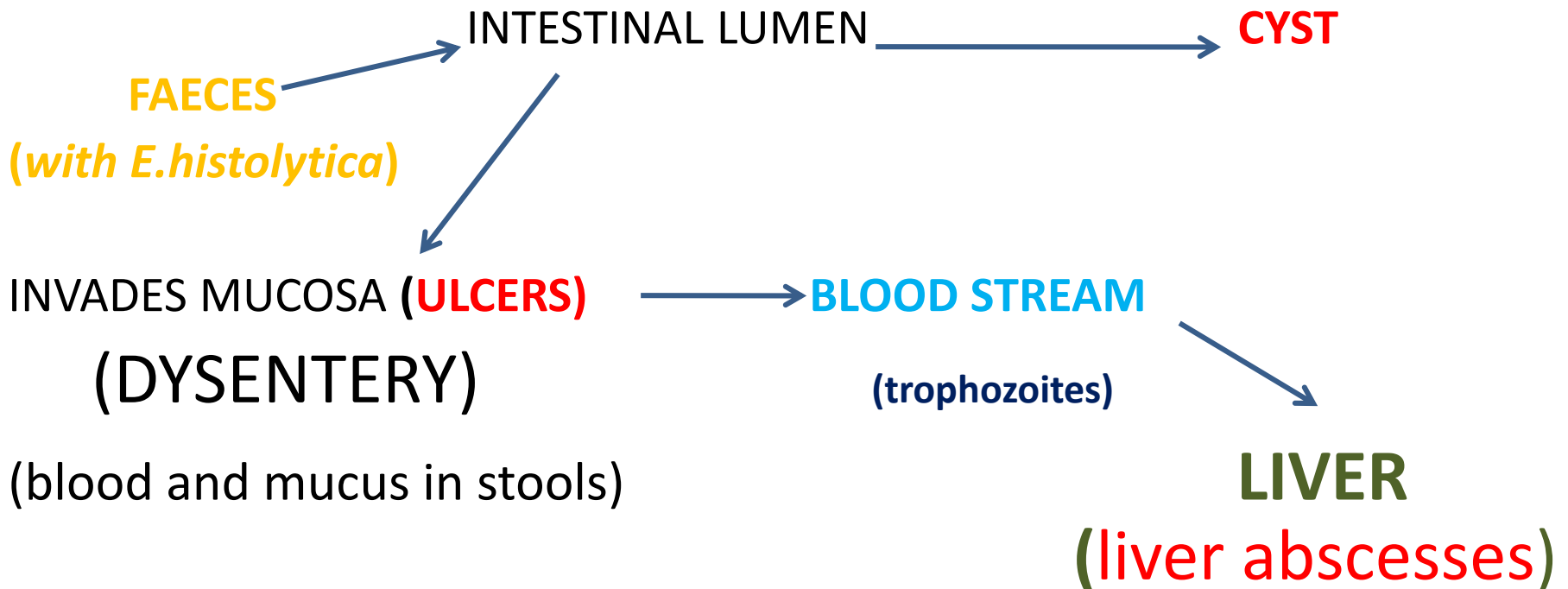
Entamoeba histolytica

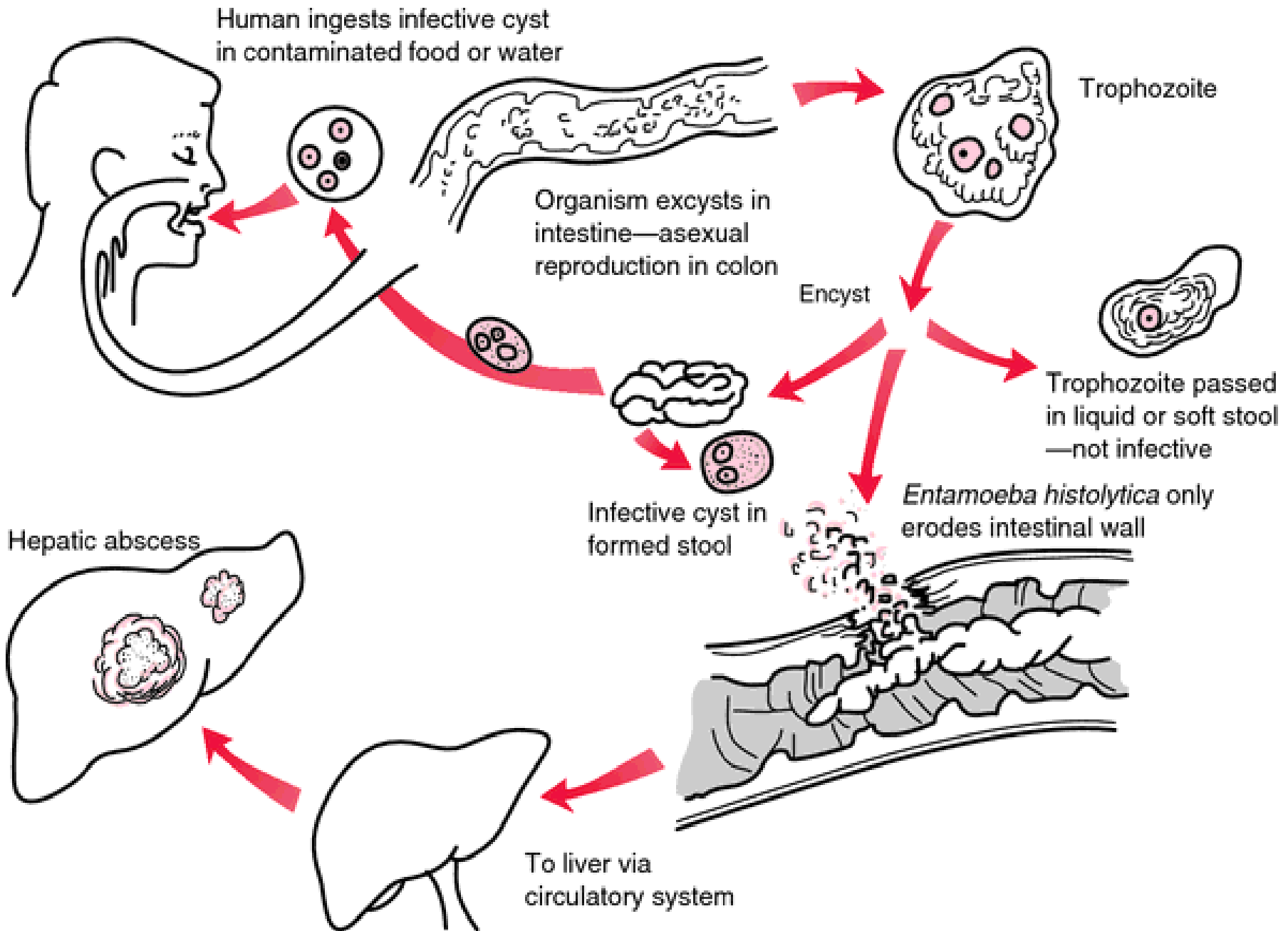


ANTI-AMOEBICS

- Drugs acting against *Entamoeba histolytica*
- Poor environmental sanitation and low socio-economic status spreads the disease.
- Occurs due to faecal contamination of food and water.

Pathophysiology:





- **Cysts** are infective
- They can survive even outside the human body.
- They can transform to trophozoites.
- **Trophozoites** are non-infective.
- Can reproduce and feeds on intestinal bacteria.
- May cause ulcers.
- ***People with HIGH RISK of Ameobiasis:***
 - People who have traveled to locations with poor sanitation
 - People who live in institutions with poor hygiene, such as prisons
 - Men who have sex with other men
 - People with compromised immune systems and other health conditions

Signs & Symptoms

- Most people with amoebiasis won't experience significant symptoms.
- When symptoms occur, they tend to appear one to four weeks after ingestion of the cysts.
- **Mild symptoms** may include:
 - Abdominal cramps
 - Diarrhoea (passage of soft stools with mucus and occasional blood)
 - Fatigue
 - Excessive gas
 - Bowel movement with rectal pain (tenesmus)
 - Weight loss
- **Severe symptoms** may include:
 - Abdominal tenderness
 - Bloody stools, including passage of liquid stools with streaks of blood, passage of 10 to 20 stools per day
 - Fever
 - Vomiting

- *E. histolytica* infections occur in both the intestine and (in people with symptoms) in tissue of the intestine and/or liver.
- As a result, both tissue and luminal drugs are needed to treat the infection, one for each location.
- Treatment with tissue amoebicides should always be followed by a course of a luminal amoebicide to eradicate the source of the infection.
- Since most of the amoebae remain in the intestine when tissue invasion occurs, it is important to get rid of those also or the patient will be at risk of developing another case of invasive conditions.
- **Foods like APRICOT, GUAVA and BLACK TEA are known to treat infections of amoebiasis.**

CLASSIFICATION

- Tissue amoebicides:

- A. For both intestinal and extraintestinal amoebiasis:

- ✓ **Nitroimidazoles** - Metronidazole, Tinidazole, Secnidazole, Ornidazole

- ✓ **Alkaloids** - Emetine, Dehydroemetine

- B. For extraintestinal amoebiasis only:

- ✓ **Chloroquine**

- Luminal amoebicides:

- A. **Amide** - Diloxanide furoate

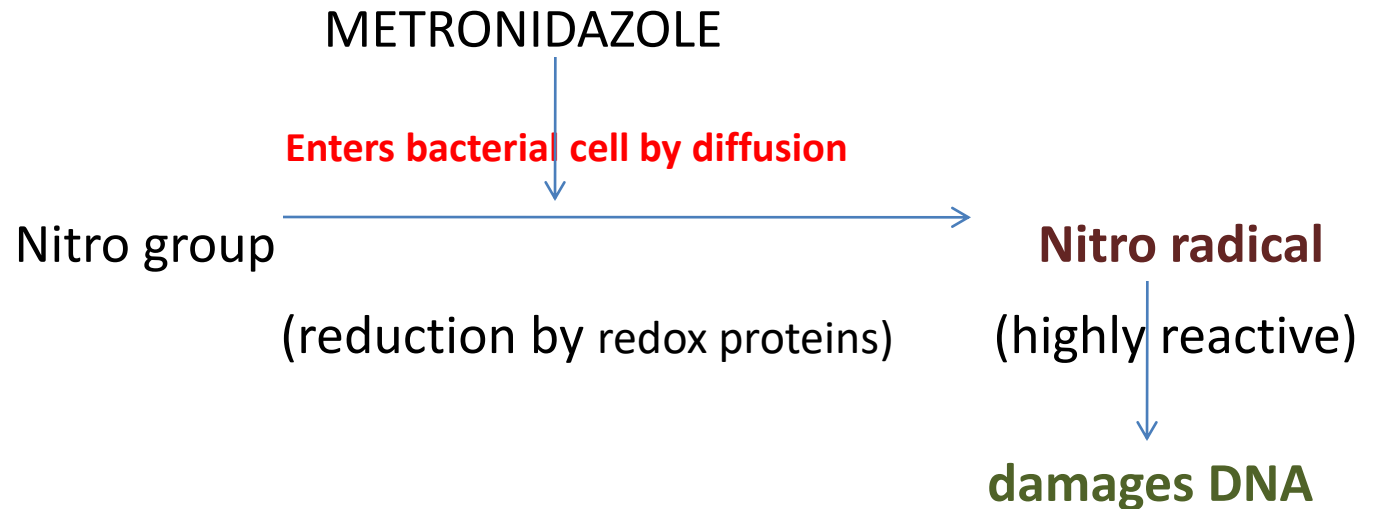
- B. **8-Hydroxy quinolines** - Quiniodochlor (Clioquinol, Iodochlorohydroxyquin)

- Di-iodohydroxyquin (Iodoquinol)

- C. **Antibiotics** - Tetracyclins

METRONIDAZOLE

- A nitroimidazole introduced in 1959 for trichomoniasis and later found to be a highly active amoebicide.
- It has broad spectrum cidal activity against all the types of protozoal infections.
- Selectively toxic to anaerobic microbes.



- DNA helix destabilization & strand breakage occurs, which leads to cytotoxicity.
- Aerobic environment inhibits the redox reaction.

METRONIDAZOLE

- **PHARMACOKINETICS:**
- Almost completely absorbed in small intestine. Distributed widely.
- Therapeutic concentrations are observed in vaginal secretion, semen, saliva and CSF.
- Metabolized in liver by oxidation and glucuronide conjugation.
- **CONTRAINDICATIONS:**
- In neurological disease, first trimester of pregnancy, chronic alcoholism.
- **ADVERSE EFFECTS:** Frequent but non-serious.
- Anorexia, nausea, metallic taste, abdominal cramps. Stool looseness.
- Less frequent – headache, dryness of mouth, dizziness, rashes.
- Prolonged use – Peripheral neuropathy. Seizures in high doses.
- Thrombophlebitis – if solution is not well diluted.

INTERACTIONS, DOSES & USES

- Alcohol intolerance. Enzyme inducers reduces therapeutic effect. Cimetidine reduces metronidazole metabolism. Decreased renal elimination of lithium.
- FLAGYL – 200, 400 mg tab
- ALDEZOLE- 200mg/5ml susp.

- **USES:**

1. Amoebiasis – 1st line drug

For invasive dysentery and liver abscesses – 800 mg TDS for 5-10 days.

Serious liver abscesses – 1g I.V infusion, 0.5 g every 12 hrs oral.

Mild cases – 400 mg TDS for 5-7 days.

2. Giardiasis – highly effective – 200 mg TDS for 7 days.

3. Trichomonas vaginitis – 400 mg TDS for 7 days – nearly 100 % cure.

4. Anaerobic bacterial infections – occurs after pelvic/colorectal surgeries.

5. Ulcerative gingivitis AND Peptic ulcer.

TINIDAZOLE

- Equally efficacious to Metronidazole, except slower metabolism, longer duration of action.
- Better tolerated drug.
- Lower side effects like metallic taste, nausea and rashes.
- High cure rates in amoebiasis.
- TINIBA – 300/500 mg tabs
- **USES:**
- Amoebiasis- 2 g OD for 3 days.
- Trichomoniasis and giardiasis – 2g single dose.
- Anaerobic infections – 2g single dose before colorectal surgery
- H. pylori infection – 500 mg BD for 1-2 weeks in triple combination.

EMETINE

- Alkaloid from *Cephalis ipecacuanha*.
- Potent, directly acting amoebicide which kills trophozoites but not cysts.
- Acts by **INHIBITING PROTEIN SYNTHESIS** in amoeba.
- Done by arresting intra-ribosomal translocation of tRNA-AA complex
- Relief occurs in 1-3 days. Highly efficacious in liver abscesses also.
- CANNOT be given ORALLY. Given by S.C or I.M injection – 60 mg OD
- Concentrated in kidney, liver and lungs. Slowly excreted in urine- 1-2 months.
- High **TOXICITY. CONTRAINDICATED** in pregnant, cardiac and renal patients.
- Irritation, pain, stiffness, eczema, nausea, vomiting, abdominal cramps, diarrhoea, weakness, hypotension and ECG changes.
- **USED** as a reserve drug in amoebiasis for patients who do not respond to metronidazole.
- EMETINE Hcl – 60 mg/2ml inj.
- **DEHYDROEMETINE** – less toxic to heart – preferred- 30 mg/ml inj.

CHLOROQUINE

- Kills trophozoites of *E. histolytica* and highly concentrated in liver.
- Used in hepatic amoebiasis only.
- Could not be used in invasive dysentery or cyst killing.
- Treatment duration is longer and relapses occur.
- Given immediately after metronidazole treatment to ensure complete eradication of trophozoites in liver.
- DOSE – 600 mg for 2 days followed by 300 mg daily for 2-3 weeks.

DILOXANIDE FUROATE

- **Highly effective luminal amoebicide** - directly kills trophozoites responsible for the production of cysts.
- Furoate ester is hydrolysed in intestine and released diloxanide is absorbed.
- Diloxanide is weaker amoebicide than its furoate ester.
- Do not have any antibacterial action.
- Less effective in invasive dysentery.
- High cure rates in mild intestinal amoebiasis.
- DOSE- 500 mg TDS for 5-10 days.
- SIDE EFFECTS – flatulence, nausea, itching.
- Used mostly in combination with metronidazole or tinidazole.

8-HYDROXY QUINOLINES

- Used mostly in **past** as they have “**ability to kill most of the protozoal parasites**”. Least absorbed and **safe drug is di-iodohydroxyquin**.
- Kills cyst forming trophozoites in the intestine, but do not have action on tissues.
- Can relieve chronic amoebic dysentery. Totally valueless in extraintestinal amoebiasis.
- Therapeutic concentrations were not obtained in intestinal wall or liver.
- **USES:** Non-specific diarrhoeas, traveller’s diarrhoea.
- **SIDE EFFECTS:** Nausea, loose and green stools.
- **IODISM** (inflammation of mucous membrane) may occur due to chronic overload.
- If patient sensitive to iodine, may experience chills, fever, cutaneous haemorrhages.
- Prolonged use of QUINIODOCHLOR causes neuropathic syndrome called SMON (Subacute Myelo Optic Neuropathy). May cause visual impairment.
- **BANNED** in india only for children. Prolonged usage is **BANNED** in INDIA.
- **ALSO USED** to treat giardiasis, local infections of trichomoas, fungal, bacterial skin infections.
- **DOSE:** Quiniodochlor-250-500mg TDS; Iodoquinol- 650 mg TDS.

TETRACYCLINES

- Directly inhibits amoebae only at high concentrations.
- Older tetracyclins are incompletely absorbed in small intestine.
- Reaches colon in large amounts and inhibits bacterial flora with which *entamoeba* lives symbiotically.
- Useful in chronic, difficulty to treat cases.
- Used in combination with directly acting luminal amoebicide.
- NOT GOOD for acute dysentery and for hepatic amoebiasis.