

# Antiamoebic drugs

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- Infections - protozoa *Entamoeba*

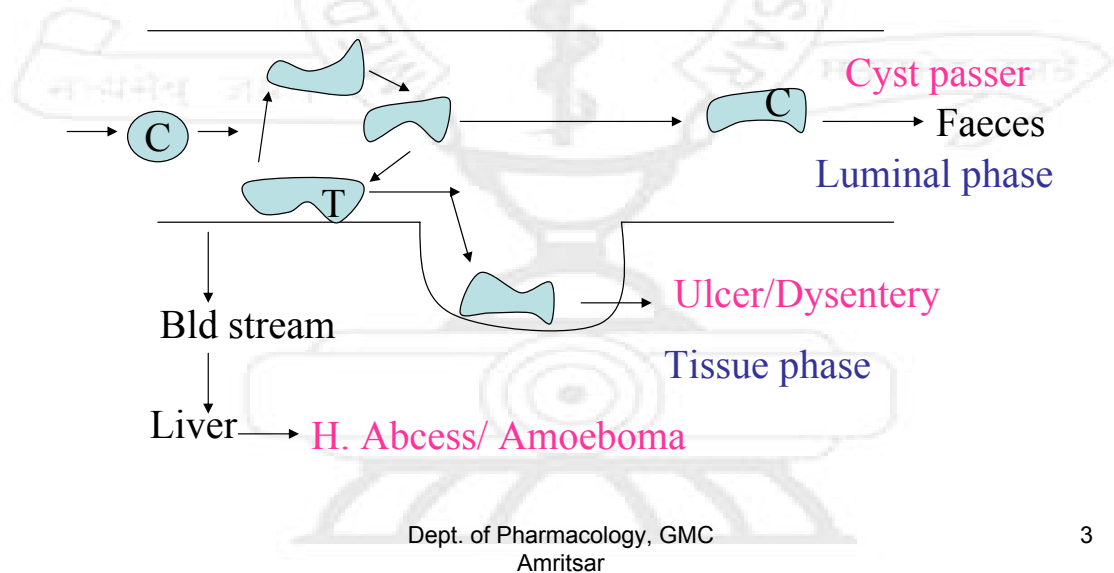
*histolytica*

- Faeco oral route
- Poor environmental sanitation
- Low socio-economic status

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# Life cycle of Amoeba



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- Luminal Phase

Cysts in Faeces – propagation of disease.

- Tissue phase

- Ulcer /dysentery

- Abcess /Amoeboma

- Extra intestinal

Lung, Spleen, Kidney, Brain

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# Classification

- Tissue Amoebiasis

\*Both intestinal & extra intestinal

Nitroimidazoles –Metronidazole

- Tinidazole

- Secnidazole

- Ornidazole

Alkaloids

- Emetine

-Hydroemetine

\* Extra intestinal amoebiasis only

-Chloroquine

- Luminal amoebiasis

-Amide

-Diloxanide furoate

-8-Hydroxy quinolones

-Quinidochlor

-Antibiotics

- Tetracycline

Treatment with tissue amoebicide

**SHOULD** always be followed by

Luminal amoebicide

to eradicate source of infection

## Metronidazole

- Prototype drug introduced in 1959
- Bactericidal against

*Giardia lamblia*, anaerobic bacteria,  
*Bacteroides fragilis*, Fusobacterium,  
*Clostridium perfringes*, *Helicobacter pylori*, Anaerobic Streptococci

## Metronidazole (MOA)

- Not clearly understood
- Enters micro-organism by diffusion

Nitro group reduced

DNA damaged

Cytotoxicity

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– High selective anaerobic action –  
interference with electron  
transportation from NADPH or other  
reduced substrates

- Also inhibits cell mediated immunity
- Induce mutagenesis
- Cause radio-sensitization

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## Pharmacokinetics

- Completely absorbed from intestine
- Wide distribution in body
- Therapeutic concentrations in
  - Vaginal secretions
  - Semen
  - Saliva
  - CSF
- Route of administration
  - oral & parenteral

## Adverse Drug Reactions

- **Frequent**
  - Anorexia, nausea, METALLIC TASTE, abdominal cramps
- **Less frequent**
  - Headache, glossitis, dry mouth, dizziness, rashes, transient neutropenia
- **On prolonged administration**
  - Peripheral neuropathy, CNS effects

- Contraindications

Neurological diseases, blood dyscrasias,  
First trimester, Chronic alcoholism

- Drug Interactions

- Disulfiram reaction

- Enzyme inducers - Rifampicin -  
↓therapeutic effect

- Cimetidine - ↓metronidazole metabolism  
-reduce dose

- Metronidazole ↓renal elimination of Lithium

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## Therapeutic uses

- **Amoebiasis** – DOC – 400mg tds X 5-7days
- **Invasive dysentery & liver abscess** – 800mg
- **Luminal amoebiasis** –less effective as completely absorbed
- **Giardiasis** – highly effective
- **Trichomonas vaginitis** – DOC – 100%effective
- **Anaerobic infections** – effective
- **Pseudomembranous colitis, Ulcerative gingivitis, H.pylori, Peptic ulcer disease, Guinea worm infestation**

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## Tinidazole

- Slower metabolism – longer duration action – Given OD
- Better tolerated
- Use in amoebiasis – 2g OD X 3 days

## Secnidazole

~ 2g stat

## Emetine

- Alkaloid from *Cephaelis ipecacuanha*
- Potent directly acting amoebicide (trophozoites)
- Does not kill cysts
- Cumulative toxicity high – Seldom used
- Reserve drug – not responding/intolerant to metronidazole
- Luminal amoebicide follows emetine to eradicate cysts

Dihydroemetine = effective but less toxic

- Preferred over emetine

# Chloroquine

- Kills trophozoites of *E. histolytica*
- Concentrates in liver
- Used in hepatic amoebiasis
- Rx duration longer
- Relapses >frequent than emetine
- Resistance doesn't develop

- Luminal amoebicide must always be given with or after Chloroquine to abolish luminal cycle
- Dose in liver abcess -600 mg(base) X  
2days  
300mg X 2-3 weeks
- Reserved drug only used when metronidazole is not tolerated

## Diloxanide furoate

- Highly effective luminal amoebicide
- Directly kills trophozoites
- No systemic antiamoebic activity seen despite absorption
- No anti bacterial action
- Drug of Choice for mild intestinal/asymptomatic amoebiasis

- Given after tissue amoebicide to eradicate cysts
- Given in combination with metronidazole OR tinidazole
- ADRs – troublesome flatulence  
pruritis  
urticaria

## 8-hydroxy quinolone

- Once widely used luminal amoebicide
- Rarely now because neuritis & optic damage
- Action similar to diloxanide furoate
- Cheap with good patient acceptability
- Uses: luminal amoebicide, giardiasis  
Locally for monilial/ trichomonas vaginitis, fungal & bacterial infections
- Di iodohydroxyquine safer drug

## Tetracycline

- Directly inhibit amoebae but only at high concentration.
- Older tetracyclines –incompletely absorbed in small intestine reach colon in large amt.  
↓bacterial flora (symbiotic with Entamoeba)
- Indirectly ↓proliferation of Entamoeba in colon

- Uses

Luminal amoebicide

Adjuvant in chronic difficult to treat cases

- Tetracyclines lessen risk of opportunistic infections

perforation

peritonitis

when given along with systemic amoebicide