Drugs for Leishmaniasis

- Leishmaniasis is a disease caused by protozoan parasites of the genus Leishmania and spread by the bite of female sandfly phlebotomus.
- The disease can present in three main ways:
  1. cutaneous: Common form
  2. Mucocutaneous: destructive form
  3. visceral leishmaniasis (Kala-azar)- severe form

Drug used in the treatment of leishmaniasis

Antimonial	Sodium stibogluconate (SSG)
Diamidine	Pentamidine
Antifungal drugs	Amphotericin B (AMB)
	Ketoconazole (KTZ)
Others	Miltefosine,
	Paromomycin
	Allopurinol

Sodium stibogluconate

- Drug of choice for kala-azar
- **MOA**: unclear; probably –SH dependent enzymes are inhibited.

  act by blocking glycolytic and fatty acid oxidation pathways.
- **A/E**: Nausea, vomiting, cough pain, stiffness of injected muscle.

  Pancreatitis, liver and kidney damage, ECG changes (severe)

Pentamidine

- are active against L. Donovani, Trypanosomes, Pneumocystis jiroveci, some bacteria and fungi (Blastomyces).

MOA: is not properly understood; probably interacts with kinetoplast DNA and inhibits topoisomerase II, or interferes with aerobic glycolysis and/ or utilization of polyamines.

A/E: toxicity is high. sharp fall in BP, dyspnoea, palpitation, fainting, vomiting, rigor and fever
Others: rashes, mental confusion, kidney and liver damage, ECG changes
Cause cytolysis of pancretic beta cells → release insulin→ hypoglycaemia.

Paromomycin

Paromomycin is an antibiotic used to treat a number of infection including amebiasis, giardiasis, leishmaniasis, and tapeworm infection.
First line treatment for amebiasis or giardiasis during pregnancy
MOA: protein synthesis inhibitor

Miltefosine exerts its activity by interacting with lipids, inhibiting cytochrome c oxidase and causing apoptosis-like cell death.

Anti-Filariasis

- **Filariasis** (or **philariasis**) is a parasitic disease caused by an infection with round worms of the Filarioidea type.
- These are spread by blood feeding black flies and mosquitoes.
- Drugs for anti-filariasis are
  1. Diethyl carbamazine citrate (DEC)
  2. Ivermectin

Diethyl carbamazine citrate (DEC)

- The first drug for filariasis.

MOA

- DEC has a highly selective effect on microfilariae.
- It causes alteration of Mf membranes, so that they are readily phagocytized by tissue fixed monocytes. Muscular activity of the Mf and adult worms is also affected causing hyperpolarization

Indications and doses

1. *Filariasis*: 2 mg/kg TDS
2. *Tropical eosinophilia*: 2-4 mg/kg TDS for 2-3 weeks

Side effects

Nausea, loss of appetite, headache, weakness, diziness

Ivermectin

MOA

- Cause tonic paralysis
- Activate glutamate gated Cl- channel→ increase GABA transmission in worms → hyperpolarization and paralysis→ Death/ Phagocytosis of worms

Side effects

Pruritus, giddiness, nausea, abdominal pain, constipation, lethargy and transient ECG changes.