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PHARMACOLOGY - III

UNIT 3

TOPIC :

- e. Anthelmintics



Anthelmintics

- Anthelmintics are the drugs used for the treatment and control of helminthic infections caused by parasitic worms (helminths).
- These drugs either kill the worms (vermicide action) or expel them from the body (vermifuge action).

Introduction to Helminths

Helminths are parasitic worms that infect humans and live mainly in:

- Intestine
- Liver
- Blood
- Lungs
- Lymphatic system

These infections are called helminthiasis.

Types of Helminths

1. Nematodes (Roundworms)

Examples

- *Ascaris lumbricoides*
- *Enterobius vermicularis*
- Hookworms
- Filarial worms

2. Cestodes (Tapeworms)

Examples

- *Taenia solium*
- *Taenia saginata*

3. Trematodes (Flukes)

Examples

- *Schistosoma*

- Liver flukes

Classification of Anthelmintic Drugs

1. Benzimidazoles

Examples

- Albendazole
- Mebendazole
- Thiabendazole

2. Drugs for Nematodes

Examples

- Pyrantel pamoate
- Levamisole
- Ivermectin

3. Drugs for Cestodes and Trematodes

Examples

- Praziquantel
- Niclosamide

4. Antifilarial Drugs

Examples

- Diethylcarbamazine (DEC)
- Ivermectin

Anthelmintic Drugs

1. Albendazole

→ Albendazole is a broad-spectrum benzimidazole anthelmintic drug effective against roundworms, tapeworms, and some tissue parasites.

Mechanism of Action

Albendazole inhibits microtubule synthesis and glucose uptake in worms.

This causes:

- Energy depletion
- Immobilization
- Death of parasite

Uses

- Ascariasis
- Hookworm infection
- Pinworm infection
- Neurocysticercosis

Adverse Effects

- Abdominal pain
- Nausea
- Headache
- Liver toxicity (rare)

2. Mebendazole

→ Mebendazole is a benzimidazole anthelmintic used mainly for intestinal worm infections.

Mechanism of Action

- Inhibits glucose uptake and microtubule formation in helminths.

Uses

- Roundworm
- Whipworm
- Pinworm

Adverse Effects

- GI disturbances

3. Pyrantel Pamoate

→ Pyrantel pamoate is an anthelmintic drug effective against intestinal nematodes.

Mechanism of Action

- Causes neuromuscular blockade and paralysis of worms.

Uses

- Pinworm
- Hookworm
- Roundworm

Adverse Effects

- Nausea
- Abdominal cramps
- Headache

4. Ivermectin

→ Ivermectin is a broad-spectrum antiparasitic drug effective against nematodes and ectoparasites.

Mechanism of Action

- It increases chloride ion permeability causing paralysis and death of parasites.

Uses

- Filariasis
- Onchocerciasis
- Scabies

Adverse Effects

- Fever
- Itching
- Dizziness

5. Diethylcarbamazine (DEC)

→ DEC is an antifilarial drug used mainly for filarial worm infections.

Mechanism of Action

- Immobilizes microfilariae and alters parasite membrane.

Uses

- Filariasis
- Tropical eosinophilia

Adverse Effects

- Fever, Headache
- Allergic reactions

6. Praziquantel

→ Praziquantel is a broad-spectrum anthelmintic effective against tapeworms and flukes.

Mechanism of Action

- Increases calcium permeability in parasite membrane leading to paralysis and death.

Uses

- Schistosomiasis
- Tapeworm infections

Adverse Effects

- Dizziness, Abdominal discomfort, Fever

7. Niclosamide

→ Niclosamide is a cestocidal drug mainly used for tapeworm infections.

Mechanism of Action

- Inhibits oxidative phosphorylation in parasites.

Uses

- Tapeworm infection

Adverse Effects

- Nausea
- Vomiting

- Abdominal pain

