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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 (vermicidal 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