

CLASSIFICATION OF ANTIMICROBIAL AGENTS

**DR ARPITA SHRIVASTAV, ASSISTANT PROFESSOR
DEPARTMENT OF PHARMACOLOGY & TOXICOLOGY
COLLEGE OF VETERINARY SCIENCE & A.H. REWA**

Classification of antimicrobial agents

1. Based on mechanism of action
2. Based on therapeutic use/ organisms affected
3. Based on spectrum of activity
4. Based on type of action
5. Antimycobacterial agents
6. Based on source
7. Based on Chemical structure

DR ARPITA SHRIVASTAV ASSTT PROFESSOR COLLEGE OF VETERINARY SCIENCE & A. H. REWA

1. Based on mechanism of action

A. Cell wall synthesis inhibitor

- a. Penicillin
- b. Cephalosporins
- c. Cycloserine
- d. Bacitracin
- e. Vancomycin
- f. Clotrimazole
- g. Monobactam

Cell membrane synthesis inhibitor

- a. Amphoterecin B
- b. Polymyxin
- c. Nystatin
- d. Meconazole

Protein synthesis inhibitor

5

- a. Binding with 50s RNA unit-
eg. Chloramphenicol, Tetracyclines, Clindamycin,
Macrolides
- b. Binding with 30s RNA unit-eg. Tetracyclines,
Aminoglycosides, Spectinomycin
- c. Inhibiting elongation factor-eg. Fusidic acid

Nucleic acid synthesis inhibitor

- a. RNA synthesis inhibitor-eg.Rifamycin ,Rifampicin
- b. DNA synthesis inhibitor-eg.Quinolones

Interfere with intermediary metabolism

- a. sulfonamide
- b. Trimethoprim
- c. Pyrimethamine

2. Based on therapeutic use/ organisms affected

Antibacterial

- a. Penicillin,,
- b. Chloramphenicol
- c. tetracyclines
- d. Aminoglycosides

Antifungal

- a. AmphotericinB,
- b. Griseofulvin
- c. kotoconazole

Antiviral

- a. Acyclovir
- b. Idoxuridine
- c. Vidarabine
- d. Zidovudine
- e. Ribavirin

Antiprotozoal

- a. Metronidazole
- b. Quinapyramine
- c. Diminazine

Anthelmintics

- a. Albendazole
- b. Levamisole
- c. Niclosamide
- d. praziquantel

Ectoparasiticides

- a. Cypermethrin
- b. Lindane
- c. Amitraz
- d. Ethion

3. Based on spectrum of activity

Narrow spectrum-

Broad spectrum

- a. Tetracyclines
- b. Chloramphenicol
- c. Gentamycin
- d. Ampicillin

- a. penicillin G
- b. Streptomycin
- c. Erythromycin
- d. Vancomycin

4. Based on type of action

11

Bacteriostatics

- a. Erythromycin
- b. Sulfonamide
- c. Trimethoprim
- d. Clindamycin
- e. Chloramphenicol

Bactericidal

- a. Penicillin G
- b. Streptomycin
- c. Vancomycin
- d. Bacitracin
- e. Potentiated sulfonamides
- f. Cephalexin

5. Antimycobacterial agents

12

- a. Isoniazide
- b. Paraamino salicylic acid.

6. Based on source

13

Funji

- a. Penicillin G
- b. Cephalexin
- c. Griseofulvin

Actinomycetes-

- a. Erythromycin
- b. Chloramphenicol
- c. Streptomycin
- d. Tetracyclines

Bacteria

- a. PolymyxinB
- b. Colistin,
- c. Bacitracin

Synthetic

- a. Sulfonamide
- b. Trimethoprim
- c. Quinolones
- d. Nitrofurans
- e. Nitroimidazole

7. Based on Chemical structure

- a. **Sulfonamide group**-trimethoprim, ormethoprim
baquiloprim
- b. **Diaminopyrimidine group**-
Sulphadimidine, sulphadiazine, sulphaniamide
- c. **Quinolones**-nalidixic acid, enrofloxin, ciprofloxin
- d. **Beta lactam antibiotics**-Penicillin G, Ampicillin
cephalexin Cloxacillin
- e. **Aminoglycosides** –Streptomycin gentamycin
- f. **Tetracycline**-
Tetracycline, Doxycyclines, oxytetracyclines

- g. **Macrolides**-Eryomycin, azithromycin
- h. **Polypeptide antibiotics** --Polymyxin B, Colistin, Bacitracin
- i. **Nitrofurans derivatives**-Nitrofurantoin, furazolidone
- j. **Nitroimidazoles**-Metronidazole, tinidazole
- k. **Polyene antibiotics**- Amphotericin B, Nystatin
- l. **Imidazole derivatives**-Ketoconazole, fluconazole, clotrimazole.

Thankyou

DR ARPITA SHRIVASTAV ASSTT PROFESSOR COLLEGE OF VETERINARY SCIENCE & A. H. REWA