

قسم التقنيات الاحيائية
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المرحلة: الثانية

جامعة الانبار

كلية العلوم

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Antifungal Drugs

20. Polyenes, such as nystatin and amphotericin B, combine with plasma membrane sterols and are fungicidal.
21. Azoles and allylamines interfere with sterol synthesis and are used to treat cutaneous and systemic mycoses.
22. Echinocandins interfere with fungal cell wall synthesis.
23. The antifungal agent flucytosine is an antimetabolite of cytosine.
24. Griseofulvin interferes with eukaryotic cell division and is used primarily to treat skin infections caused by fungi.

Antiviral Drugs

25. Nucleoside and nucleotide analogs, such as acyclovir and zidovudine, inhibit DNA or RNA synthesis.
26. Inhibitors of viral enzymes are used to treat influenza and HIV infection.
27. Alpha interferons inhibit the spread of viruses to new cells.

Antiprotozoan and Antihelminthic Drugs

28. Chloroquine, quinacrine, diiodohydroxyquin, pentamidine, and metronidazole are used to treat protozoan infections.
29. Antihelminthic drugs include mebendazole, praziquantel, and ivermectin.

Tests to Guide Chemotherapy

- I. Tests are used to determine which chemotherapeutic agent is most likely to combat a specific pathogen.

2. These tests are used when susceptibility cannot be predicted or when drug resistance arises.

The Diffusion Methods

3. In the disk-diffusion test, also known as the Kirby-Bauer test, a bacterial culture is inoculated on an agar medium, and filter paper disks impregnated with chemotherapeutic agents are overlaid on the culture.
4. After incubation, the diameter of the Zone of inhibition is used to determine whether the organism is sensitive, intermediate, or resistant to the drug.
5. MIC is the lowest concentration of drug capable of preventing microbial growth; MIC can be estimated using the E test.

Broth Dilution Tests

6. In a broth dilution test, the microorganism is grown in liquid media containing different concentrations of a chemotherapeutic agent.
7. The lowest concentration of a chemotherapeutic agent that kills bacteria is called the minimum bactericidal concentration (MBC).

Resistance to Antimicrobial Drugs

1. Hereditary drug resistance (R) factors are carried by plasmids and transposons.
2. Resistance may be due to enzymatic destruction of a drug, prevention of penetration of the drug to its target site, cellular or metabolic changes at target sites, or rapid efflux of the antibiotic.
3. Resistance can be minimized by the discriminating use of drugs in appropriate concentrations and dosages.

Antibiotic Safety

1. The risk (e.g., side effects) versus the benefit (e.g., curing an infection) must be evaluated prior to using antibiotics.

Effects of Combinations of Drugs

1. Some combinations of drugs are synergistic; they are more effective when taken together.
2. Some combinations of drugs are antagonistic; when taken together, both drugs become less effective than when taken alone.

The Future of Chemotherapeutic Agents

1. Many bacterial diseases, previously treatable with antibiotics, have become resistant to antibiotics,
2. Chemicals produced by plants and animals are providing new antimicrobial agents called antimicrobial peptides.
3. Protein synthesis in pathogens can be blocked by siRNAs.
4. New agents may inhibit bacterial virulence factors.

References': 1- Microbiology an introduction TWELFTH EDITION. Gerard. Tortora.2016.

2- Microbiology an introduction TENTH EDITION. Gerard. Tortora.2010.