PHARMACOLEARN

It's Important to Know!

BP303T — Pharmaceutical Microbiology

B.Pharm Semester 3 · Unit 3 — Fungi, viruses, disinfectants and sterility testing

Unit III: Fungi, viruses, disinfectants and sterility testing

Fungi and viruses

Fungi are eukaryotes that may grow as yeasts, moulds or dimorphic forms. Moulds produce hyphae and mycelia; yeasts commonly reproduce by budding. Fungal identification may use morphology, culture, microscopy and biochemical or molecular methods.

Viruses contain genetic material within a protein coat and may have a lipid envelope. They replicate by entering susceptible host cells and using host and viral functions. Viral survival outside the host depends on envelope, temperature, moisture, radiation and surface conditions. Exact virus classification should be checked against the prescribed text where required.

Disinfectants and antiseptics

Disinfectants are applied to inanimate surfaces, while antiseptics are used on living tissue under appropriate conditions. Activity depends on concentration, contact time, temperature, pH, organic matter, microbial load, biofilm and organism resistance. Common classes include alcohols, phenolics, halogens, oxidising agents, aldehydes, quaternary ammonium compounds and biguanides. Product-specific claims and concentrations should be taken from the product monograph.

Sterility testing

Sterility testing is performed on representative samples using validated media and incubation conditions. Membrane filtration is suitable for many filterable products; direct inoculation is used when filtration is unsuitable. Controls are needed for media fertility, method suitability and environmental conditions. A negative test does not prove that every unit is sterile; it provides evidence under the sampling plan.

Unit III: Frequently asked questions

Q: How do yeasts differ from moulds?

A: Yeasts are usually unicellular and reproduce by budding, while moulds grow as multicellular hyphae forming a mycelium.

Q: Why is contact time important for a disinfectant?

A: Microbial injury accumulates over time, so insufficient contact can leave viable organisms.

Q: Why must a sterility test include controls?

A: Controls show whether media, technique, environment or the product itself could cause a false result.

Unit III: Key takeaways

- Fungi are eukaryotes and viruses require host cells for replication.
- Disinfectant performance depends on organism and environmental conditions.
- Sterility tests require method suitability and representative sampling.
- A negative result has meaning only within a validated procedure.
- Product-specific disinfectant claims require verified sources.

Unit III: Practical correlation

Practical correlation: sterility testing. A laboratory should prevent accidental contamination through gowning, environmental monitoring, controls and aseptic handling. The product-specific test method is set out in the applicable pharmacopoeia.