



قسم تقنيات المختبرات الطبية



وَاللَّهُ يَتَعَالَى الْعِزَّ وَالْجَلَالَ وَالْبَحْثُ الْعِلْمِيُّ

كلية المعارف الجامعة

Department

Medical Laboratory Techniques

القسم:

Subject Name:

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Subject Name: Medical Microbiology

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Lecture 1



HARMFUL USE OF BACTERIA

1.Reduction of soil fertility

Some denitrifying bacteria suggest *Bacillus denitrificans* and *Thiobacillus denitrificans* act upon ammonia and some other compound in soil and release free nitrogen into the atmosphere this amount for the loss of nutritious material from the soil which result in reducing soil fertility also.



Lecture 1



2. Food poisoning

Several saprophytic bacteria grow on food materials and produce harmful toxins micrococcus bio-genes cause poisonous poisoning of cream milk, cheese and meat products *Salmonella typhimurium*

and *Clostridium botulinum* make food poisonous.



Lecture 1

3. Human Disease caused by Bacteria

- Pneumonia
- Whooping Cough
- Botulism
- Typhoid Fever
- Cholera
- Syphilis
- Gonorrhoea
- Tuberculosis
- Meningitis
- Tetanus
- Diarrhea



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Bacteria - what comes to mind?

- Diseases
- Infections
- Epidemics
- Food Spoilage
- Only 1% of all known bacteria cause human diseases
- About 4% of all known bacteria cause plant diseases
- 95% of known bacteria are non-pathogens



Lecture 1

Bacterial Diseases in Humans

There are various diseases that are caused by bacteria in humans. Some of the common bacterial diseases in humans are tuberculosis, pneumonia, typhoid, tetanus, etc. Bacteria that cause various diseases in humans are known as pathogenic bacteria.



Lecture 1

What are Bacterial Diseases?

Bacterial diseases are diseases caused by bacteria. There are a number of bacteria found in the human body. A variety of these do not cause any infections and are known as “**good bacteria**”. The bacteria that cause diseases in humans are called “**harmful bacteria**”. There are thousands of bacteria present in the gut that are beneficial for humans. The pathogenic bacteria in humans account for less than a hundred species.



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Bacterial diseases are communicable diseases and spread from one person to another. Bacterial diseases are infectious diseases and are transmitted through water, air, food, vectors, body fluids, etc. Bacterial disease in humans is one of the major causes of death to humans, even after so much advancement in medical research.

Bacterial Diseases in Humans

There are a variety of bacteria that cause diseases in humans. These include:

Bacterial Diseases in Humans	Causative Agent
Pulmonary Tuberculosis	<i>Mycobacterium tuberculosis</i>
Diphtheria	<i>Corynebacterium diphtheriae</i>
Cholera	<i>Vibrio cholerae</i>
Leprosy	<i>Mycobacterium leprae</i>
Pertussis	<i>Bordetella pertussis</i>
Tetanus	<i>Clostridium tetani</i>
Plague	<i>Yersinia pestis</i>
Gonorrhoea	<i>Neisseria gonorrhoeae</i>
Syphilis	<i>Treponema pallidum</i>
Salmonellosis	<i>Salmonella enteritis</i>



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Bacterial Diseases Causes

The bacteria enter the human body through various sources and cause bacterial diseases. Bacterial diseases are communicable diseases. Bacteria can be transmitted through direct contact or through food, water, air, etc. These sources include:

- Through contaminated food and water.
- By having sexual contact with an infected person.
- By sharing contaminated needles, or needles for tattooing or infected surgical equipment.
- Through infected faeces or body fluids.



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Bacterial Disease Symptoms

Following are the major symptoms of bacterial diseases:

- Bloody and painful urine
- Diarrhoea
- Vomiting and nausea
- Weakness
- Stiffness in neck
- Flu-like symptoms
- Rashes and lesions



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Treatment of Bacterial Diseases in Humans

Bacterial infections can be treated by the use of antibiotics.

Bacteriocidal medicines kill bacteria, whereas **bacteriostatic** medicines inhibit the further growth of bacteria. **Bacteriophages** are also used to treat certain bacterial infections. It is known as phage therapy.



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Prevention of Bacterial Diseases

Bacterial diseases in humans can be prevented by maintaining proper hygiene. Bacterial diseases can be prevented by taking the following measures:

- Timely vaccination.
- Cooking food properly.
- Proper sterilisation of needles and other surgical equipment.
- Washing and sanitizing hands at regular intervals.
- Avoiding unprotected sexual intercourse.
- Be mindful and avoid going out in public places if infected.

Basic terminology used in discussing the control of microorganisms include:

1. Sterilization: Sterilization is the process of destroying all living organisms and viruses. A sterile object is one free of all life forms, including bacterial endospores, as well as viruses.

2. Disinfection: Disinfection is the elimination of microorganisms, but not necessarily endospores, from inanimate objects or surfaces.

3. Decontamination: Decontamination is the treatment of an object or inanimate surface to make it safe to handle.

4. Disinfectant: A disinfectant is an agent used to disinfect inanimate objects but generally too toxic to use on human tissues.

5. Antiseptic: An antiseptic is an agent that kills or inhibits growth of microbes but is safe to use on human tissue.

6. Sanitizer: A sanitizer is an agent that reduces microbial numbers to a safe level.

7. Antibiotic: An antibiotic is a metabolic product produced by one microorganism that inhibits or kills other microorganisms.

8. Chemotherapeutic synthetic drugs: Synthetic chemicals that can be used therapeutically.

9. Cidal: An agent that is cidal in action will kill microorganisms and viruses.

10. Static: An agent that is static in action will inhibit the growth of microorganisms.



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The End