



Microorganisms and their Diseases

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Abstract

The environment of earth, atmosphere the different types of microbes are present. We have given some of the microbial diseases caused from different pathogens like bacteria, virus, protozoans, fungus its diseases, symptoms, treatments and preventions, the bacterial diseases(cholera, pneumonia, plague, tuberculosis) viruses diseases(Aids, chicken pox, small pox, chicken gunya) protozoan diseases(Amoebiasis, visceral leishmaniasis, malaria, sleeping sickness) Fungal diseases (ring worms, rust of wheat).

Key Words: Microorganisms, Diagnosis, Pathogens, Treatment.

Introduction

A microorganism or microbe is a microscopic organism, which may be single-celled or multicellular. The study of microorganisms is called microbiology, a subject that began with the discovery of microorganisms in 1674 by Antoine van Leeuwenhoek, using a microscope of his own design. It Defined as sicknesses or ailments caused in animals and humans by the introduction of one of four different types of **microbes**. Microorganisms are very diverse and include all bacteria, archaea and most protozoa. This group also contains some fungi,

algae, and some micro-animals such as rotifers. Many macroscopic animals and plants have microscopic juvenile stages. Some microbiologists classify viruses and viroids as microorganisms, but others consider these as nonliving. In July 2016, scientists identified a set of 355 genes from the last universal common ancestor of all life, including microorganisms, living on Earth.

Microorganisms live in every part of the biosphere, including soil, hot springs, inside rocks at least 19 km deep underground, the deepest parts of



the ocean, and at least 64 km high in the atmosphere. Microorganisms, under certain test conditions, have been observed to thrive in the vacuum of outer space. Microorganisms likely far outweigh all other living things combined. The mass of prokaryote microorganisms including the bacteria and archaea may be as much as 0.8 trillion tons of carbon, out of the total biomass of between 1 and 4 trillion tons. Microorganisms appear to thrive in the Mariana Trench, the deepest spot in the Earth's oceans. Other researchers reported related studies that microorganisms thrive inside rocks up to 580 m below the sea floor under 2,590 m of ocean off the coast of the north western United States, as well as 2,400 m beneath the seabed off Japan. In August 2014, scientists confirmed the existence of microorganisms living 800 m below the ice of Antarctica. According to one researcher, "You can find microbes everywhere they're extremely adaptable to conditions, and survive wherever they are. Microorganisms are crucial to nutrient recycling in ecosystems as they act as decomposers. As some microorganisms can fix nitrogen, they are a vital part of the nitrogen cycle, and recent studies indicate that airborne microorganisms may play a

role in precipitation and weather. Microorganisms are also exploited in biotechnology, both in traditional food and beverage preparation, and in modern technologies based on genetic engineering. A small proportion of microorganisms are pathogenic, causing disease and even death in plants and animals.

Robert Hooke coined the term "cell" after viewing plant cells under his microscope. Antoine Van Leeuwenhoek was one of the first people to observe microorganisms in 1673, and was the first to discover single-celled life in 1676. Later, in the 19th century, Louis Pasteur found that microorganisms caused food spoilage, debunking the theory of spontaneous generation. In 1876 Robert Koch discovered that microorganisms cause diseases. (

THE MICROORGANISMS ARE:

I. Bacteria and their diseases:-

Antonie van Leeuwenhoek, Dutch microscopist who was the first to observe bacteria and protozoa. The naming of bacteria is done according to the binomial system introduced by Carl Linnaeus. The genus name and the species epithet together form the scientific name, or the species name, of the



bacterium. The name is formed using Latin or Latinized Greek words. The classic symptom is large amounts of watery diarrhea that lasts a few days. vomiting and muscle cramps may also occur. Diarrhea can be so severe that it leads within hours to severe dehydration and electrolyte imbalance.

Cholera requires immediate treatment because the disease can cause death within hours. rehydration. the goal is to replace lost fluids and electrolytes using a simple rehydration solution, oral rehydration salts (ors). the ors solution is available as a powder that can be reconstituted in boiled or bottled water.

PNEUMONIA: Pneumonia is an inflammatory condition of the lung affecting primarily the microscopic air sacs known as alveoli.

These medicines are used to treat bacterial pneumonia. It may take time to identify the type of bacteria causing your pneumonia and to choose the best antibiotic to treat it. If your symptoms don't improve, your doctor may recommend a different antibiotic. Cough medicine.

C. PEPTIC ULCERS: Ulcers in the lining of stomach and starting part of

small intestine. Treatment for peptic ulcers depends on the cause. Usually treatment will involve killing the H. pylori bacterium, if present, eliminating or reducing use of aspirin and similar pain medications, if possible, and helping your ulcer to heal with medication.

D.PLAGUE: The symptoms of plague depend on the concentrated areas of infection in each person: bubonic plague in lymph nodes, septicemic plague in blood vessels, pneumonic plague in lungs.

Antibiotics such as streptomycin, gentamicin, doxycycline, or ciprofloxacin are used to treat plague. Oxygen, intravenous fluids, and respiratory support are usually also needed. People with pneumonic plague must be isolated from caregivers and other patients

E. TUBERCULOSIS:-

Tuberculosis generally affects the lungs, but can also affect other parts of the body. Most infections do not have symptoms, known as latent tuberculosis. . About 10% of latent infections eventually progresses to active disease which, if left untreated, kills about half of those infected. The classic symptoms of active TB are a chronic cough with blood-tinged



sputum, fever, night sweats, and weight loss.

TREATMENT: Tuberculosis, you must take antibiotics for at least six to nine months. The exact drugs and length of treatment depend on your age, overall health, possible drug resistance, the form of TB (latent or active) and the infection's location in the body.

II. VIRUS AND THIR

DISEASES:- The viruses discovered by Dmitri Ivanovsky's 1892. And the discovery of the tobacco mosaic virus by Martinus Beijerinck in 1898. virus are retained by such filters, a new world was discovered: filterable pathogens.

A. AIDS: Severely weakens immunity and makes way for a number of other pathogens.

Although there is no cure for acquired immunodeficiency syndrome (AIDS), medications have been highly effective in fighting HIV and its complications. Drug treatments help reduce the HIV virus in your body, keep your immune system as healthy as possible and decrease the complications you may develop.

B. CHICKEN POX;-

Chickenpox, also known as varicella, is a highly contagious disease. The disease results in a characteristic skin rash that forms small, itchy blisters. Less severe than small pox. Almost eradicated after the invention of vaccination.

TREATMENT: **Acyclovir**, an antiviral medication, is licensed for treatment of chickenpox. The medication works best if it is given within the first 24 hours after the rash starts. For more information, see **Acyclovir Treatment**. Other antiviral medications that may also work against chickenpox include valacyclovir and famciclovir.

C. SMALL POX:- Almost eradicated after the invention of vaccination.

TREATMENT: The smallpox vaccine is the only known way to prevent smallpox in an exposed person. If given within 4 days of viral exposure, the vaccine can prevent or significantly lessen the severity of smallpox symptoms. Vaccination 4-7 days after exposure may offer some protection from the disease and may lessen its severity.

D. CHIKUNGUNYA: Causes severe joint pains. Animal reservoirs of the



virus include monkeys, birds, cattle, and rodents. This is in contrast to dengue, for which primates are the only hosts.

TREATMENT: 1. There is no vaccine to prevent or medicine to treat chikungunya virus.

2. Treat the symptoms: Get plenty of rest. Drink fluids to prevent dehydration. Take medicine such as acetaminophen (Tylenol®) or paracetamol to reduce fever and pain

E. DENGUE FEVER: High fever, headache, vomiting, muscle and joint pains, and a characteristic skin rash.

TREATMENT: Treatment for Dengue Fever. There is no specific medicine to treat dengue infection. If you think you may have dengue fever, you should use pain relievers with **acetaminophen** and avoid medicines with **aspirin**, which could worsen bleeding. You should also rest, drink plenty of fluids, and see your doctor.

Preventing Microbial Diseases:

In order to prevent the spread of microbial diseases, we must take steps to check the growth of disease-causing micro-organisms and to prevent the microbial carriers like

houseflies, mosquitoes and cockroaches from breeding. For this, we must follow these guidelines:

1. Eating a balanced diet: A balanced diet increases the resistance of our body against diseases.

2. Proper storage of food and water: We must store food and water in closed containers to protect them from micro-organisms and insects.

3. Maintaining personal hygiene: We must keep ourselves clean to prevent micro-organisms from entering our body.

4. Vaccination: Diseases like T.B. (tuberculosis), measles, polio, chicken pox, typhoid, whooping cough and tetanus can be prevented by vaccinating children against them.

5. Maintaining clean environment: Keeping our home and neighborhood clean prevents the growth of both micro-organisms and their carriers.

6. Proper disposal of wastes: Proper disposal of human excreta and domestic waste prevents the contamination of water which would otherwise cause many water-borne diseases like cholera, jaundice, diarrhea, etc.

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