



Article on Bacteria

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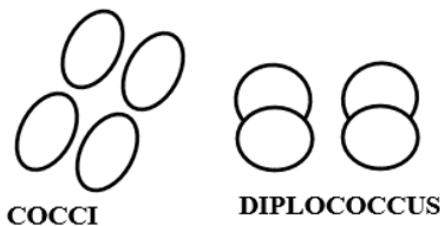
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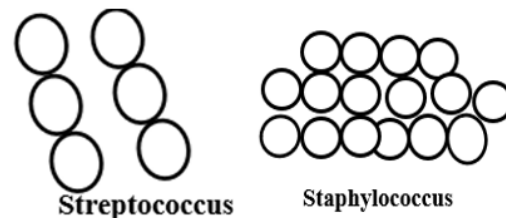
Bacteria are unicellular organisms with a simple cellular organization. They differ from other cells by being prokaryotic. i.e., lacking a distinct nucleus with a cellular membrane. Its entire genetic material is linked in a single chromosome. The Cytoplasm is densely packed with RNA and is finely granular due to the presence of a large number of ribosomes.

Bacteria cells reproduce by division. Production of spores which ensures survival during periods of drought etc is common amongst gram +ve bacteria. Bacteria are not all pathogenic some are useful in the food industry (fermentation e.t.c) while others encourage decomposition of organic materials (recycling of nutrients). A few others are engaged in nitrogen fixation (legumes) many bacteria are motile by means of flagella the distribution of which may be as follows

- **Monotrichous:** One Polar flagellum or if there are two they are bipolar
- **Lopotrichous:** A list of two or more flagella which may be mon or bipolar.
- **Peritrichous:** Flagella are randomly distributed over the cell surface. Cell shape provides criterion for grass classification of bacteria. Single subs spherical cells are known as Cocci. When cocci are united as a pair they constitute a diplococcus.



Tetraheads of cocci constitute a *streptococcus*. Irregular groupings of cocci are described as *Staphylococci*.



- **Bacillus:** Long and cylindrical bacteria are called bacilli or rods. Rods are usually very short of measure between 0.7x1.3- 10.6.
- **Spirillum:** These are spiral shaped bacteria and are usually not important in fish disease.

Bacteria may be identified on the basis of the following shape and colony characteristics-The surface texture of a bacterial colony which

may be rough, smooth or mucoid is important in the identification of bacteria. Smooth colonies are usually more virulent than rough colonies.

Growth and environmental factors

Growth of bacteria is usually influenced by a number of factors

- **Nutrient Availability:** When the medium of growth is rich in nutrients, bacteria demonstrate increased growth pattern, especially of the lag phase.
- **Optimum P^H:** P^H of 6-8 appear to be ideal for bacterial growth Above and below the range, growth is often retarded.
- **Temperature:** On the basis of their temperature tolerance bacteria have been classified in to
 - o **Psychrophilic Organism:** Will grow at 0°C
 - o **Thermophilic Organism:** Will grow at 50°C or more Heat- Loving bacteria.
 - o **Mesophilic Organism:** Between 18-45°C most bacteria causing fish diseases are mesophiles exhibiting optimum temperature at 10-30°C
 - o **Osmolarity:** Some bacteria will not grow well in media without varying of salts, common example is the Vibrio group.