

Industrial Importance of - Bacteria:-

Bacteria are prokaryotic, acellular, microscopic with simple cellular organization. Bacteria play a very vital role in the growth of human civilization. They are both foe as well as friend to mankind. They have tremendous scope for the benefit of mankind. They have influenced in a variety of ways in the industrial growth. Some of the important industrial uses of Bacteria are as follows:-

(2) The souring & curdling of milk is achieved by Bacteria known as lactic acid bacteria. (e.g. *Lactobacillus*, *Streptococcus* etc.)

(21) Butter and cheese is manufactured by the activity of certain lactic acid bacteria.

(22) Formation of vinegar is done by the activity of acetic acid bacteria.

Sugar $\xrightarrow{\text{yeast}}$ Alcohol
(Apple, Sugar cane)

Alcohol + O₂ $\xrightarrow[\text{acetic}]{\text{Acetic Bacter}}$ Acetic Acid
(vinegar)

(14) The curing of tea, tobacco and the manufacture of indigo is done by the activity of certain bacteria. Bacteria involved in this processes are *Bacillus megatherium*, *B. subtilis* and *Micrococcus* etc.

(v) Bacteria play an important role in the retting of jute, flax and hemp fibres. They hydrolyse the pectic substances attached with fibres. For this purpose, the jute & flax are immersed in water for a week or more. During this period bacteria grow in the water and decompose pectic substances. Finally, the jute & flax are washed & fibres are separated and dried in sun.

(vi) The preparation of coffee and cocoa is also dependent upon bacterial action. The characteristic flavour, odour & aroma are obtained due to activity of bacteria.

(vii) Bacterial fermentation produces many chemicals which are useful for various industries. *Clostridium acetobutylicum* ferments carbohydrate producing acetone, methyl alcohol, butyl alcohol which are useful for various industries.

Besides these, lactic acid, citric acid & vitamins are also produced as fermentation product of various carbohydrates.

(viii) Bacteria are helpful in the manufacture of wine.

(ix) Drug industry: - various

Pharmaceutical houses are engaged now-a-days in the commercial production of antibiotics from the different strains of bacteria. About 30 percent or more antibiotics are now isolated from bacteria & Actinomyces. Some of the important antibiotics of bacterial origin are -

Streptomycin % Streptomyces griseus

Terramycin % S. rimosus.

Chloromycetin % S. venezuelae

Neomycin % S. Fradiae etc

- *) Bacteria are ^{also} used in the preparation of vaccine & serum.
- *) Manufacture of hide & skin into leather is done by the help of certain bacteria. -x-