

# NUTRITION IN BACTERIA

From nutritional point of view, bacteria are the most versatile organisms. They may be autotrophs (synthesizing their own food), heterotrophs (dependent on other organisms & non-living matters) and symbionts.

## AUTOTROPHIC

oxidising simple inorganic or organic substances & synthesizing food

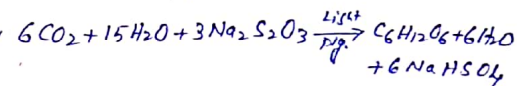
### 1. PHOTOAUTOTROPHIC

These bacteria require radiant energy, & pigment; H-donor

#### a. PHOTOLITHOTROPHIC

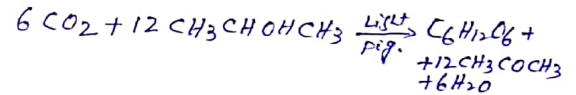
H-donor inorganic substances

GREEN SULPHUR eg. *Chloridium*  
H-donor-H<sub>2</sub>S; pigment. chlorobium chlorophyll  
(*Bacteriovirescens*)  
PURPLE SULPHUR eg. *Chromatium*  
Sulphur compound, pigment - *Bacteriochlorophyll*



#### b. PHOTOORGANOTROPHIC

H-donor is non-sulphur organic compounds like organic acids, alcohol etc. eg. Purple non-sulphur bacteria (*Rhodospirillum*)  
Pigment Bacteriochlorophyll



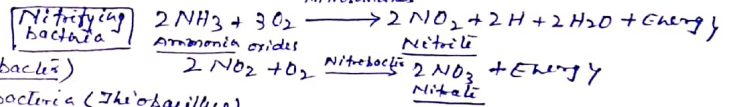
### 2. CHEMOAUTOTROPHIC

Do not require light & pigment; Energy comes from oxidation of inorganic & organic compounds. Most of the bacteria

#### a. CHEMOLITHOTROPHIC

Energy from the oxidation of inorganic substances

eg. Nitrifying bacteria (*Nitrosomonas*, *Nitrobacteria*)  
Iron bacteria (*Ferrobacillus*); Sulphur bacteria (*Thiothrix*)  
Hydrogen bacteria (*Hydrogenomonas*)



#### b. CHEMO-ORGANOTROPHIC

Energy from organic substances eg. Methane bacteria, *Acetobacter* (*Methanococcus*)



## HETEROTROPHIC

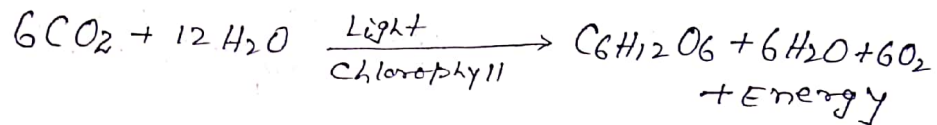
1. PARASITIC - eg. *Staphylococcus*, *Clostridium*
2. SAPROPHITIC - putrefying bacteria - eg. *Bacillus mycoides*, *B. pasteurii*

## SYMBIOTIC

eg. *Rhizobium*  
*Lycium*

AHMAD MABOOD

### PHOTOSYNTHESIS IN HIGHER PLANTS



- In green plants, the process of photosynthesis results in the reduction of  $\text{CO}_2$  to carbohydrates. This process requires a hydrogen donor. Here the H-donor is water ( $\text{H}_2\text{O}$ ) and  $\text{O}_2$  is produced.
- In bacterial photosynthesis hydrogen donor is a substance other than water, hence, oxygen is never produced.
- Thus in bacterial photosynthesis in place of water some other compound is utilized.