

Nutritional reqo of Bacteria \Rightarrow

• Bacterial Growth = \uparrow in the population of bacteria cells
in terms of ~~growth~~ (Number & size) [DEPTH OF BIOLOGY]

• Nutrition = Term use for supply of various Chemical
or compounds to the bacterial cells for their growth
& this chemical & compound are called Nutrients.

Nutrient are reqo. for bacteria \rightarrow for their Normal
Cell functioning [DEPTH OF BIOLOGY]

of Cellular function like Energy Pdn., Synthesis of
Cellular Content i.e. Cell wall, Lipid; Genetic Material
i.e. RNA, DNA & Other biosynthetic processes. [DEPTH OF BIOLOGY]

These Nutrient are termed as Essential Nutrient. [Page No.]

Essential Nutrients \Rightarrow Subst. that req. by the organism for their survival. These are the

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Substance which involve in certain biosynthetic properties

Macronutrient

Micronutrient

Growth factor

\rightarrow Req. by the Microorg. in large quantities.

\rightarrow Req. in small quantities. They are also called Trace Elements.

\rightarrow They are organic mol. req. by the

C, N
O, K S, Mg
H, Ca

Mn, Cu, Fe
Zn, Co, Ni
Molybdenum,

cell which cannot be syn

by the cell itself

& need to be provided in the growth med.

\Rightarrow Vitamin
Amino acid
Proteins

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Nutritional Requirement of Bacterial Cell

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Nutrient

1. Carbon
2. Oxygen
3. Nitrogen
4. Hydrogen
5. Phosphate
6. Sulphur

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Source

- Organic Compound
or
 CO_2
- H_2O , Organic Compound, CO_2 & O_2
- NH_3 , NO_3 , Organic Compound, N_2
- H_2O , Organic Compound, H_2
- Inorganic Phosphate (PO_4)
- SO_4 , H_2S , Organic Sulphur Compound.

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Significance

- Main Constituent of Cellular Material
- Constituent of Cell material & Cell Water; O_2 use- accept in aerobic respiration.
- Constituent of Amino acid, Nucleic acid, Nucleotides & Coenzymes.
- Main Constituent of Organic Comp. & Cell Water.
- Constituent of Nucleic acid, Nucleotide, Phospholipids, Lipopolysaccharide.
- Constituent of Cysteine, Methionine, Glutathione.

7. Potassium

Pot. Salts

- Main Cellular Inorganic Cation & Co-factor for certain enzymes.

8. Magnesium

Mg. Salts

- Inorg. Cellular Cation, Co-factor for certain enzymatic rxn.

9. Calcium

Ca Salts

- Inorg. Cellular Cation, Co-factor for certain enzymes & a component of endospores.

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Role of Micronutrients

① Zn

⇒ Works as Co-enzyme for Metabolic activities & also for activation enzyme involved in DNA, RNA Biosynthesis.

ground in DNA binding protein.

② Cu

⇒ Essential for Cellular Respiration (Oxid, Red.)
Component of Cytochrome (Involve in ATP synth)

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③ Iron

⇒ Component of Cytochrome Involved in ATP synth. Involved in Metabolism
also work as Co-Factor for enzyme activities

④ Boron \Rightarrow Essential Component for Cell Signalling
from One Cell to another Cell

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⑤ Manganese \Rightarrow Attach with many enzymes which
Catalyse the transfer of Phosphate Group for energy
Production.

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⑥ Molybdenum \Rightarrow Req. for Nitrogen fixation
by bacterial cell.

⑦ Cobalt \Rightarrow It works as a part of Vitamin B₁₂ req.
for bacterial growth.

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