

25/5
D.I. A PROTOZOA (NUTRITION) Paper - I

Nutrition is one of the most important characteristics of living organisms. It is the process of obtaining nourishment for growth, repair of the body and energy production. It is derived from the Latin word *nutrimentum*, meaning nourishment.

In protozoa, nutrition takes place mainly by 4 ways:

1. Heterotrophic nutrition, ② Autotrophic nutrition, ③ Parasitic nutrition ④ Mixotrophic nutrition.

1. Heterotrophic nutrition: The nutrition in which the organism utilizes, rearrange and decompose the complex organic substances is called Heterotrophic nutrition.

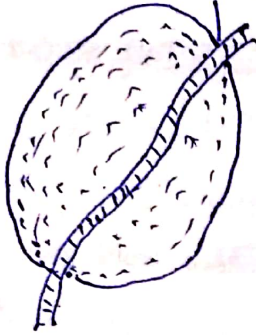
Heterotrophic nutrition includes:

① Holozoic or Zoofrophic and Saprozoic or Saprophytic nutrition.

② Holozoic Nutrition: In most of the protozoa, holozoic nutrition takes place. It involves food capture, ingestion, digestion, assimilation and egestion.

Food capture and ingestion: The food of protozoa consists of various micro organisms, other protozoa, algae, and bacteria. The methods of food capture vary among different groups of protozoa. The regular locomotory organelles usually serve to capture the prey but specialised organelles may also be present.

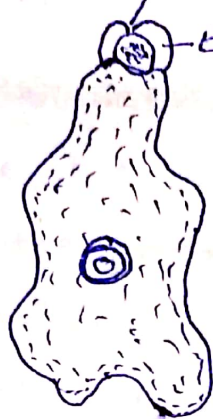
FILAMENTAL ALGAE



IMPORT

BACTERIAL PLEA

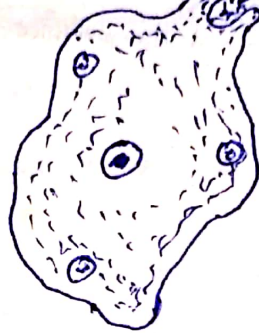
ECTOPLASM



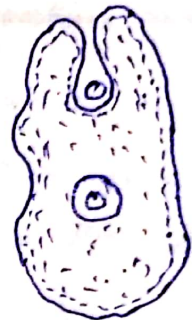
CIRCUMFLUENCE

FOOD CUP

PARAMECIUM



CIRCUMVALLATION



INVAGINATION

In Sarcodina, some Hypermastixina and the amoeboid phase food is ingested at any point on the body surface with the help of pseudopodia. Rumbler (1910) described 4 methods of ingestion in Amoeba which are:

i) Import: The food (inactive prey like algae filament etc) is taken inside the body upon contact with very little movement on the part of amoeba.

ii) Circumvallation: In this method the amoeba without contact with food (active prey like paramecium etc) forms pseudopodia which surround the food on all sides forming food cup and finally ingest it.

iii) Circumfluence: In this method the cytoplasm flows around the food (bacterial plea) when it comes in contact with it on all sides and engulf it.

iv) Invagination: In this method, amoeba touches and attaches to inert food. Then the ectoplasm which is in contact with the food invaginates into the endoplasm as a tube. The cell membrane at the point of contact disappears later on.