

INTRODUCTION :-

Animals require food, to provide fuels in terms of energy so as to keep alive and maintain body processes and as raw materials for building and maintaining cellular and metabolic machinery and also for growth and reproduction.

The process by which they obtain such food, which they themselves do not synthesize is called nutrition.

Types of Nutrition in protozoa

(A) Heterotrophic

(B) Autotrophic

(A) Heterotrophic Nutrition is further classified into following types

- (i) Holozoic or zootrophic or phagotrophic;
- (ii) Saprozoic, (iii) Saprophytic (iv) Mixotrophic

(i) Holozoic Nutrition:- Majority of free-living protozoa ~~prokaryotes~~ obtain their food by Holozoic method, in this type whole food is taken not their fragments. Holozoic nutrition is performed in following steps —

(a) Ingestion Or Engulping of food —

When live food organism are captured

they have to be taken in with the help of eversible

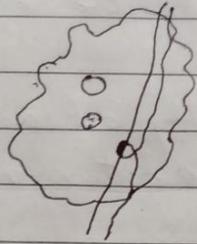
organelle

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Rumpler (1910) has described four methods of ingestion in amoeboid protozoa. They are

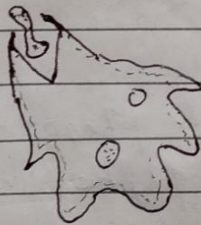
(i) Import :- Food is taken into the body upon contact with very little movement on the part of the animal.



Amoeba verrucosa feeding on filamentous algae.

ex- Amoeba ingesting Oscillatoria by Import.

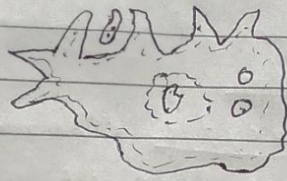
(ii) Circumfluence :- The cytoplasm of the amoeba flows around the food organism as soon as it comes in contact with it on all sides by pseudopodial formations and engulf it.



ex- Amoeba proteus feeding on bacterial gaea

(iii) Circumvallation :- This method is applied when amoeba feeds upon an active prey. Pseudopodia is stretched out to engulf an active prey, while it is still some distance away.

Pseudopodia surround food without touching it and their tips fused to form so called food vacuole and engulfed as a whole.

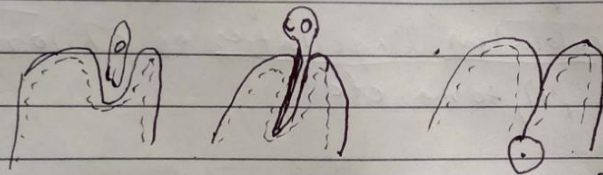


ex Amoeba feeding on
paramecium by circumvallation

(iv) Invasion :- Sucking of food particle
upon contact with ectoplasm and then
drawing them into endoplasm

In Heliozoans and radiolarians axopodia
traps the prey and withdraw into deeper
cytoplasm with the prey.

Suctorians have knobbed tentacles, paralysed
prey is being drawn into endoplasm by
through the central tube present in the tentacle.



Amoeba ingesting colpidium by invasion

Digestion :- It takes place in the food vacuoles with
digestive enzymes provided by lysosomes
which are attached with food vacuoles.

Reaction takes place both in acidic and
alkaline medium respectively.

Proteolytic enzymes act in acidic medium and
alkaline medium, hydrolysis of carbohydrate
takes place in alkaline medium.

Absorption :- Digested food diffused into endoplasm
and then assimilated into protoplasm.

Stored food is glycogen, paramylum, lipids, chlamatoid
brodies.

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pinocytosis:- Pinocytosis or cell drinking is observed in some Amoeba.

For liquid food, pinocytic channels are formed on the body surface through invagination. Small food particles carried through these channels accumulate in a food vacuole formed at the end of the channel and pinched off into the endoplasm.

Saprophytic nutrition:- In this type of nutrition dissolved organic matters are absorbed through general body surface by the process of osmosis.

This type of nutrition is found in amoebae, and some coloured flagellates or chlorellae, Asteria, Polysoma etc.

Mixotrophic nutrition:- This is the combination of autotrophic, osmotrophic and phagotrophic mode of nutrition.

It is found in flagellates such as Euglena and Paramecium.

Nutrition of parasites:-

Intertine in habiting zoomastigophores such as Trichomonas ingest by phagotrophy using their mouth or cytostome.

Zoo flagellates such as Trypanosoma feed by osmotrophy.

Conclusion:- protozoans being acellular adapted and evolved different mode of feeding to survive in their microenvironment and continue their race.

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