B.Sc Zoology (H) Part-I Paper-I Group- A Topic- **Nutrition in Protozoa** Lecture Notes By Dr. Arjun Pratap Singh

Protozoa obtain nutrition in many ways. Some synthesize their own food other get it synthesized by algae living in their cytoplasm and still others capture the food. Some Protozoa lead a parasitic life, usually doing no harm or very little harm to their hosts but occasionally cause serious diseases.

All types of nutrition are found in protozoa namely holophytic nutrition, holozoic nutrition, saprozoic nutrition, mixotrophic nutrition and parasitic nutrition. Their modes of nutrition are as follows:

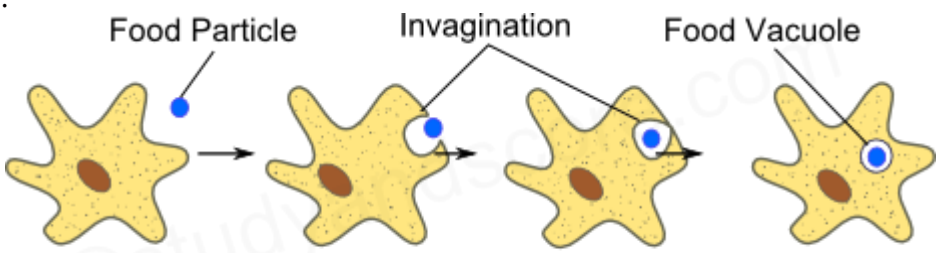
Holophytic nutrition:

The phytoflagellates possess chloroplasts and chromatophores to synthesize their food by photosynthesis. They utilize sunlight, carbon dioxide and water as raw materials. This method of self-feeding is referred to as Autotrophic phototrophy. The dextrose sugar paramylon synthesized is characteristic of euglenoid flagellates.

Holozoic nutrition:

Most of the Protozoa derive nutrition by ingesting other organisms. This mode of nutrition is said to be holozoic. It involves development of organelles for food capture, ingestion, digestion, assimilation and egestion of undigested food materials. They capture their food by flagella, pseudopodia and trichites.

.



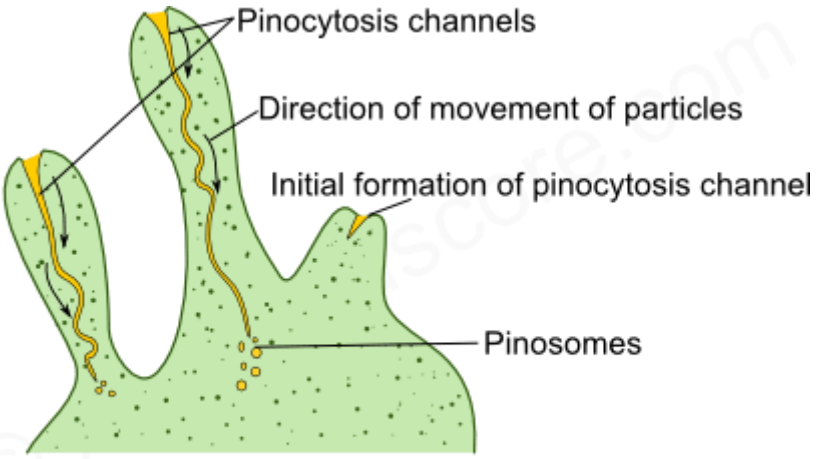
HOLOZOIC NUTRITION IN AMOEBA

Some use axopodia, reticulopodia and tentacles to pull the prey that comes within their reach. In ciliates the ciliary oral apparatus is well developed for food capturing and driving it towards mouth or cytosome and then pushing it into the cytopharynx.

Pinocytosis:

This method also called as cell drinking involves ingestion of liquid food by invagination through the surface of the body. The pinocytosis channels are formed at some parts of the body, which enclose the fluid from the surrounding medium. The lower ends of these channels are pinched as food vacuoles into the endoplasm. Pinocytosis is only induced by certain active substances in the medium surrounding the cell. High molecular compounds from the external medium are absorbed by this method.

.

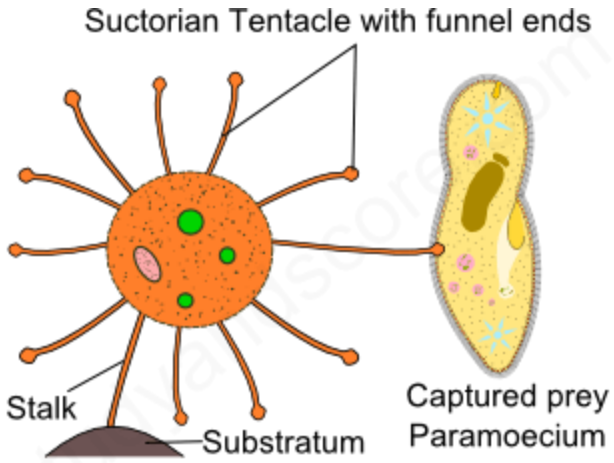


PINOCYTOSIS IN AMOEBA

Saprozoic nutrition:

This involves the absorption of food by osmosis, through the general body surface. So this method is referred as osmotrophy. The food mainly is the dead organic matter rendered so by the decomposing bacteria. This kind of nutrition is found in *Mastigamoeba* and also some of the colorless flagellates.

.



FEEDING IN SUCTORIANS

Suctorians feed on other ciliates with the help of their tentacles which have funnel ends. Each tentacle consists of a rounded rigid central tube. As soon as the prey is attached, the tentacles tips paralyses the prey with some hypnotoxin and gradually suck the body fluids with the central tubes.

Myxotrophic nutrition:

This is a combination of more than one mode of nutrition. Many protozoa using photosynthesis as a means also take in some part of their diet in dissolved form by osmotrophy or solid form by phagocytosis. The best examples of this kind of nutrition are flagellates like Euglena and Peranema.

Nutrition of parasitic protozoa:

The mechanisms used by parasitic protozoa are almost are similar to that of their non-parasitic protozoa. Parasites inhabiting the intestine and blood have a distinct mouth through which food particles are ingested through the process of phagotrophy. The osmotrophic forms of protozoa are either coelozoic or histozoic. The coelozoic forms absorb their food by their cell surface. The histozoic forms feed on the substances by osmotrophy. Parasitic saprozoic forms may also directly use the serum of their host blood.