

E Content for student of Patliputra University, Patna

B.Sc. Part III Paper –VI

Subject:- Zoology Hons.

Topic:- Describe the biology and control of Vector of Kala-azar

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more kappa particles.

Q. 12. Describe biology and control of vector of Kala-azar.

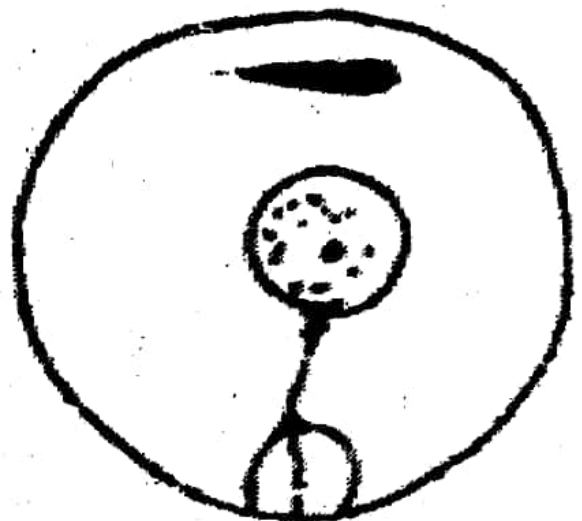
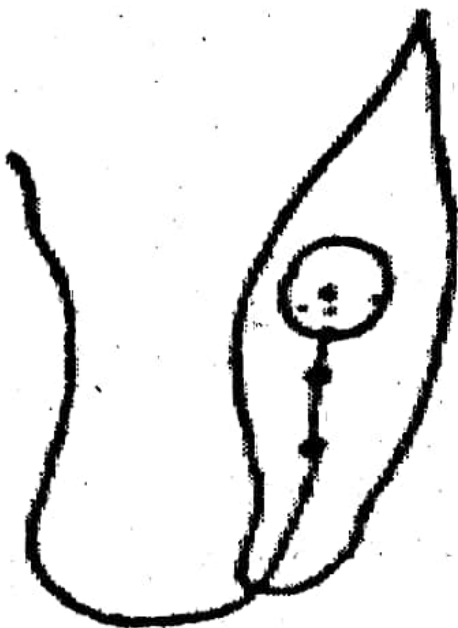
Ans. *Leishmania donovani* is an important pathogenic protozoa of human being. Causative organism of a dreadful disease, Kala-azar. It was discovered by Leishman and Donovan in 1903.

***Leishmania* is Dimorphic Occurs in Two Forms :**

- (i) Amastigote form which is found in man.
- (ii) Promastigote form which is found in sand fly.

Amastigote Form : It is microscopic round or oval in shape, about 2 μ m in diameter. The body is surrounded by a thin pellicle. The Cytoplasm is homogeneous with a centrally located large nucleus on one side of the nucleus, a rod shaped kinetoplast and a small deeply stained blepharoplast. Besides the Cytoplasm contains a single mitochondrion, golgi body, endoplasmic reticulum and ribosomes.

Promastigote Form : It is elongated, Cylindrical, 15 to 20 μ m long and 3 μ m width. It is found in the intermediate host, the sand fly. Nucleus is located in the middle of the body. At the anterior end of the body, an oval Kinetoplast and a small blepharoplast present. from which arises a long flagellum. A distinct mitochondrion, golgi body, endoplasmic reticulum are present in the Cytoplasm.



Life Cycle : The life cycle of Leishmania is digenetic requiring two hosts. The primary host is the man and the secondary host is the sand fly.

Amastigote forms multiply by simple binary fission and promastigote forms by longitudinal binary fission.

In man : Amastigote form divides rapidly by binary fission in reticulo-endothelial cells usually in the liver and spleen. Now, when a sand fly sucks the blood of an infected person, numerous amastigote forms enter into the alimentary canal.

In Sand Fly : In the gut of sand fly, the amastigote form changes into promastigote form. Now it rapidly multiply by longitudinal binary fission in the producing large number of promastigote forms. These migrate forward in the anterior part of alimentary canal. Heavy infection of fore gut is found after 6-9 days of the infected blood meal. This is called anterior station development.

Transmission : Now, when such infected sand fly bites a man, promastigote forms enter into the blood circulation and some of them enter inside the cells of reticulo-endothelial system while others are destroyed. Here, they change into amastigote forms and undergo multiplication.

Control : 1. Destruction of sand fly by spraying insecticides.
2. Keep away yourself from the sand fly bite.