

### 3) Leishmania donovani (Kala-azar)

#### Classification

Phylum = Protozoa

Class = flagellata

Genus = Leishmania

Species = donovani

#### Habit / Habitat

It is a digenetic endoparasite. It is found in the reticulo endothelial system of human and alimentary canal of sandfly.

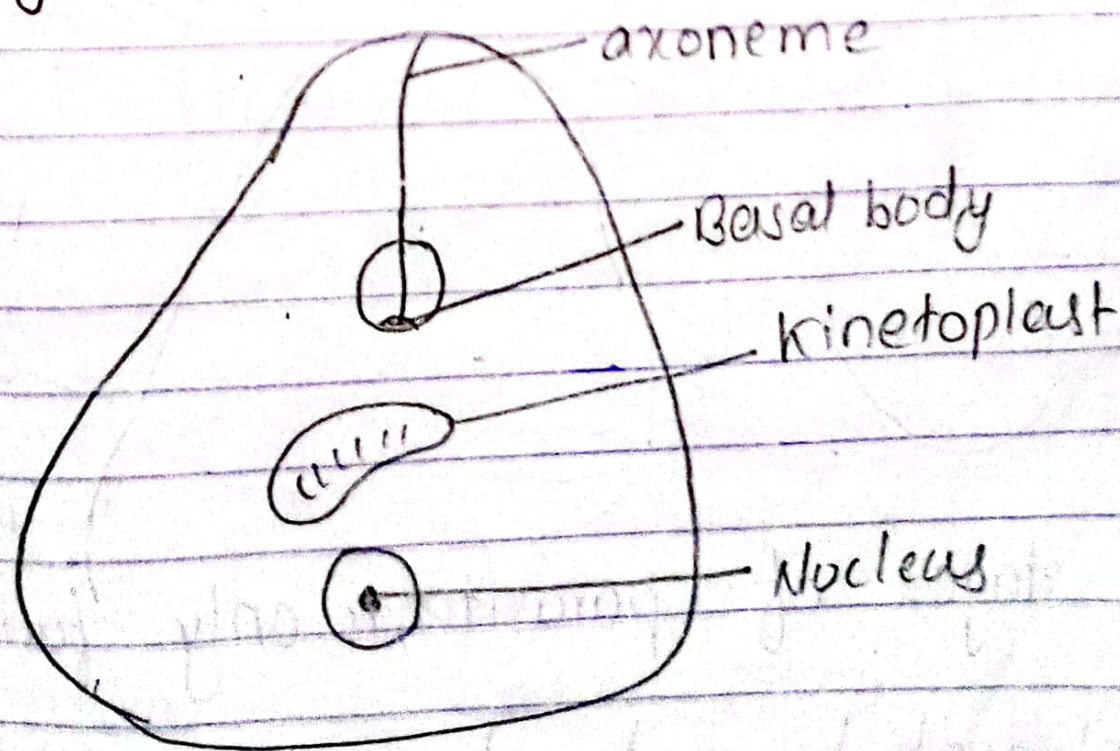
#### Distribution

It is endemic in Africa, India, China, etc.

#### Morphology

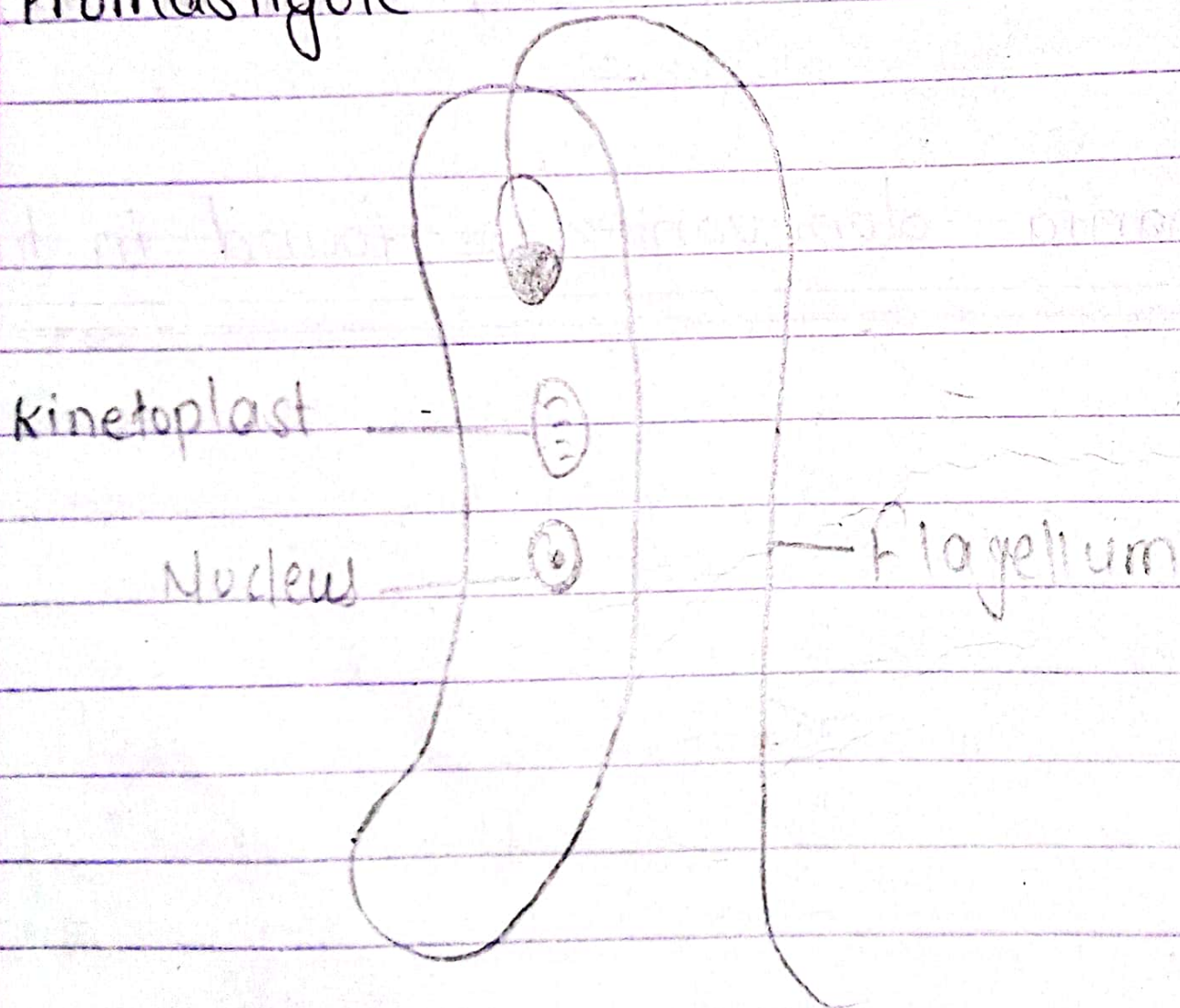
Leishmania donovani is found in two forms

#### i) Amastigote



- This stage of parasite is found in the cell of reticulo endothelial system. Its characters are as follows:-
- It is round or oval in shape and covered externally by pellicle.
  - Nucleus is oval or round.
  - Kinetoplast lies at right angle to the nucleus.
  - It contains axoneme which represent the root of flagellum.
  - There is no flagella.

## 2) Promastigote



- This stage of parasite is only found in sandfly.
- It is elongated rod shape in structure.
  - Nucleus is situated centrally.
  - Kinetoplast lies transversally towards the anterior

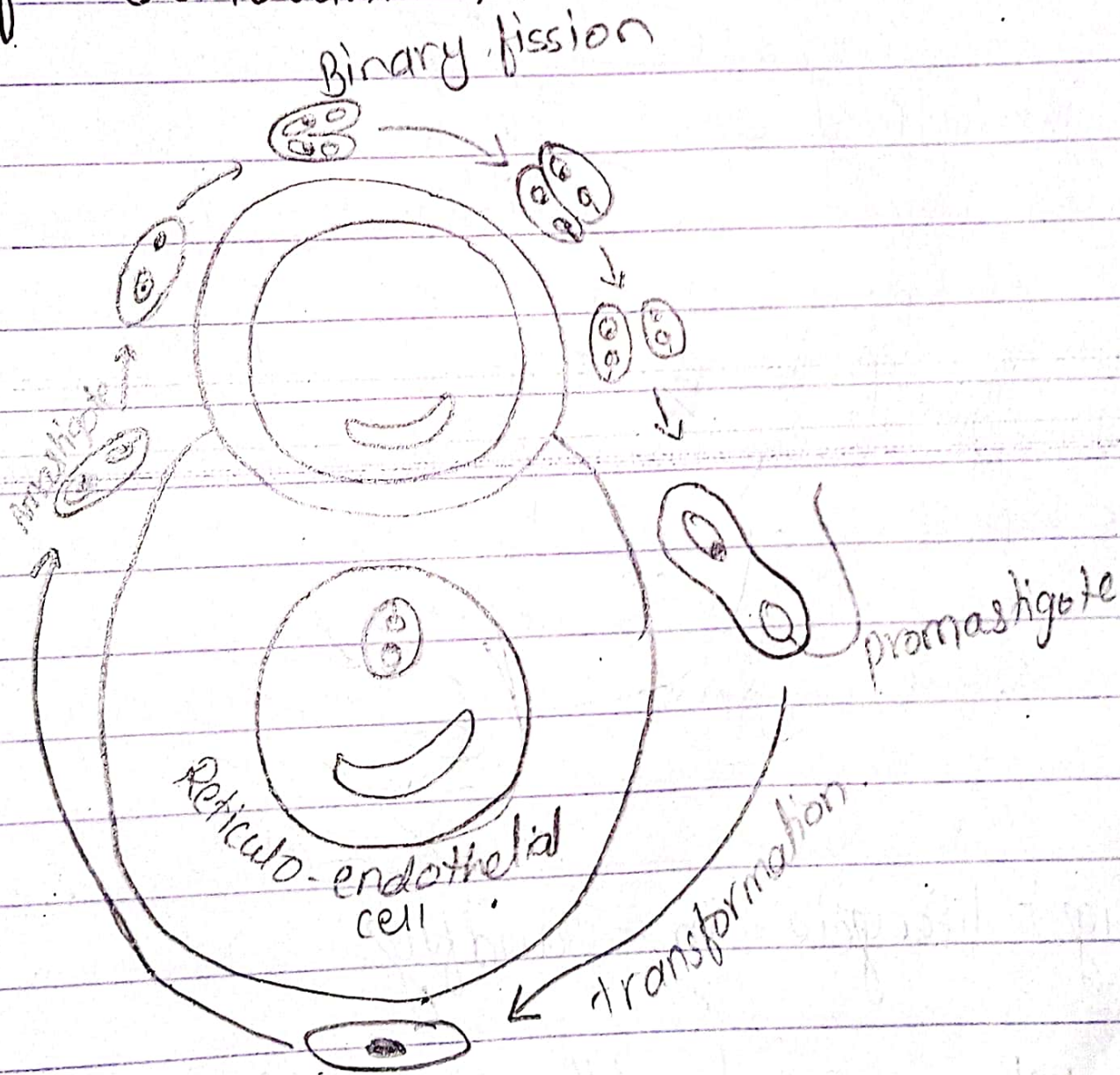
end.

- It contains single flagellum which may be same length as the body or longer.

## Lifecycle of *Leishmania donovani*

*Leishmania donovani* is a digenetic parasite. Its life cycle is completed into two hosts. The primary host is man and secondary host is female sandfly.

### A. lifecycle of *donovani* in man.



When an infected sandfly bites a healthy person, then promastigote form a parasite are introduced into the blood. This promastigote form develop into amastigote form and reach to the cells of reticulo endothelial system and multiply by binary fission. Due to

continuous multiplication cell becomes packed with the parasite and get rupture. Released parasites enters into the blood circulatory system and again taken up by sandfly during the biting. Some of the released parasite again attack to the reticulo-endothelial cell and body organ progressively infected.

### B) lifecycle of leishmania in sandfly.

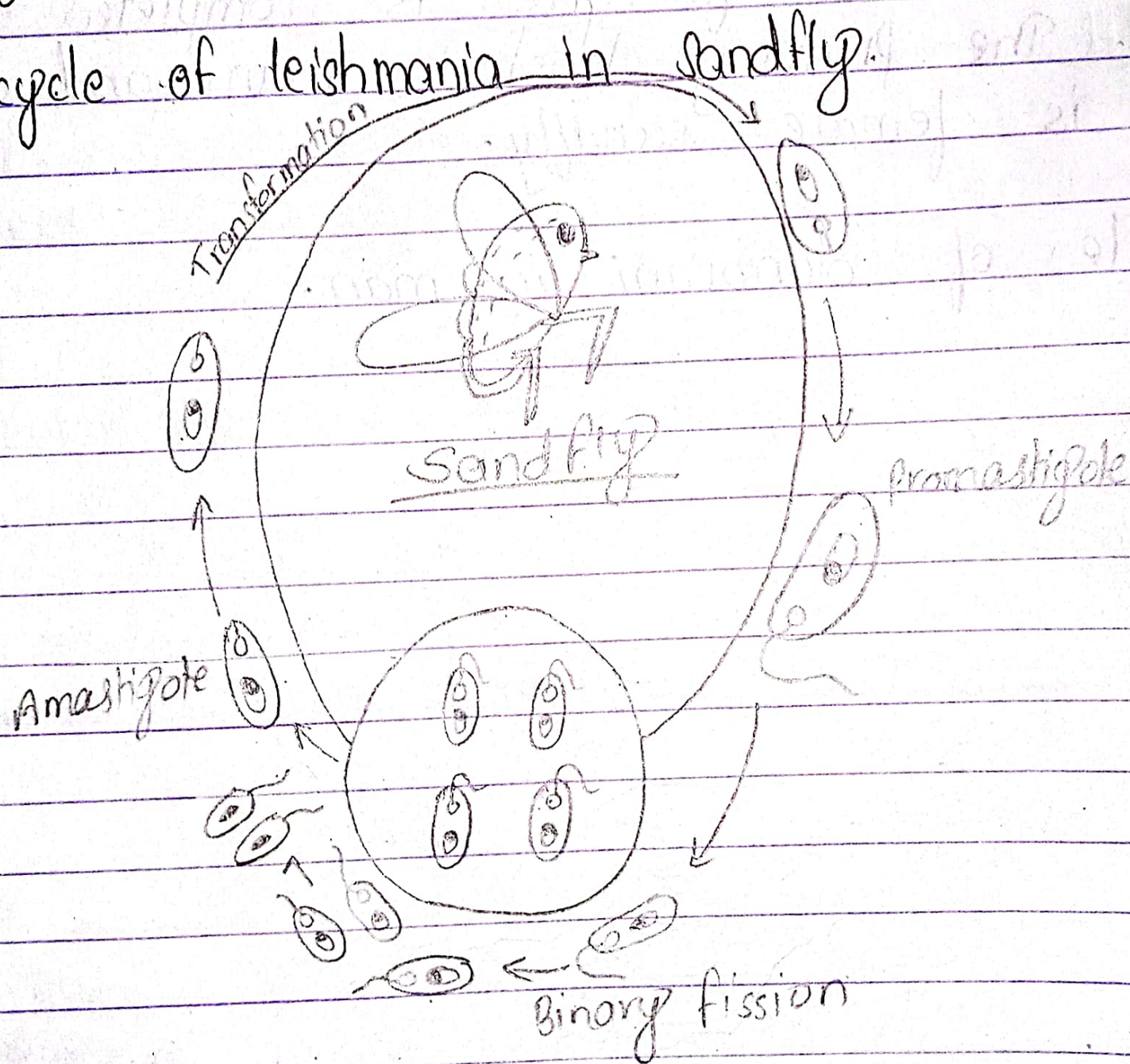


Fig: lifecycle in sandfly

When a healthy sandfly sucks the blood of an infected person, then amastigote form enters into the sandfly. Inside it, these amastigote forms becomes elongated and develop flagellum and transferred into promastigote form. These promastigote multiply by binary

fission and produce numerous promastigotes. These promastigotes spread forwarded to the anterior part of alimentary canal within 6 to 9 days. And mixed with the saliva of salivary gland. When such sandfly bites to the healthy man then they inject the promastigote. In this way life cycle of *leishmania donovani* is completed.

### Symptoms

- Swelling of liver
- Continuous fever
- Thickness of body
- Change in the colour of skin
- causes anaemia.

### Prevention

- Use insecticides to the eradication of sandfly.
- Avoid houses surrounded by dense vegetables.
- Use mosquito net while sleeping.

### Treatment

Pentavalent antimony compound are the drug for the treatment of kalazar.