PARASITOLOGY PROPER

MALARIA

1. Old RBCs are preferentially infected by
   a. Plasmodium falciparum
   b. Plasmodium malariae
   c. Plasmodium vivax
   d. Plasmodium ovale
2. The infective form of the malaria parasite is
   a. Oocyst
   b. Sporozoite
   c. Bradyzoite
   d. Tachyzoite
3. Prolonged parasitism in malaria is due to
   a. Antigenic variation
   b. lntracellularity of parasite
   c. lmmunosuppression
   d. Sequestration
4. Malaria pigment is formed by
   a. Parasite
   b. Bilirubin
   c. Hemoglobin
   d. All of the above
5. Schuffner's dot in RBCs are sesen in infection with
   a. Plasmodium vivax
   b. Plasmodium falciparum
   c. Plasmodium malariae
   d. Plasmodium ovale
6. Quartan malaria is caused by
   a. Plasmodium vivax
   b. Plasmodium falciparum
   c. Plasmodium malariae
   d. Plasmodium ovale
7. Schlzonts of Plasmodium falciparum are not found in peripheral Answer blood because
   a. Schizonts are absent in the life cycle
   b. Schizonts are killed by antibodies
   c. Schizonts develop only in capillaries of internal organs
   d. None of the above

8. Crescent-shaped or banana-shaped gametocytes are seen in infection with
    a. Plasmodium vivax
    b. Plasmodium falciparum
    c. Plasmodium malariae
    d. Plasmodium ovale
9. Malaria is not seen in patients with
    a. G6PD deficiency
    b. Sickle cell trait
    c. Duffy negative blood group
    d. All of the above
10. Which plasmodial infection is more often associated with nephritic syndrome
    a. Plasmodium vivax
    b. Plasmodium falciparum
    c. Plasmodium malariae
    d. Plasmodium ovale
11. Which is the treatment of choice for benign tertian malaria
    a. Sulfamethoxazole – pyrimethamine
    b. Quinine
    c. Mefloquine
    d. Chloroquine
12. Gametocidal pernicious malaria may occur in
    a. Plasmodium vivax
    b. Plasmodium falciparum
    c. Plasmodium malariae
    d. Plasmodium ovale
13. Describe briefly the life cycle and laboratory diagnosis of:
    a. Plasmodium vivax
    b. Plasmadium falciparum
14. Differentiate between:
    a. Different malarial parasites
    b. Recrudescence and relapse

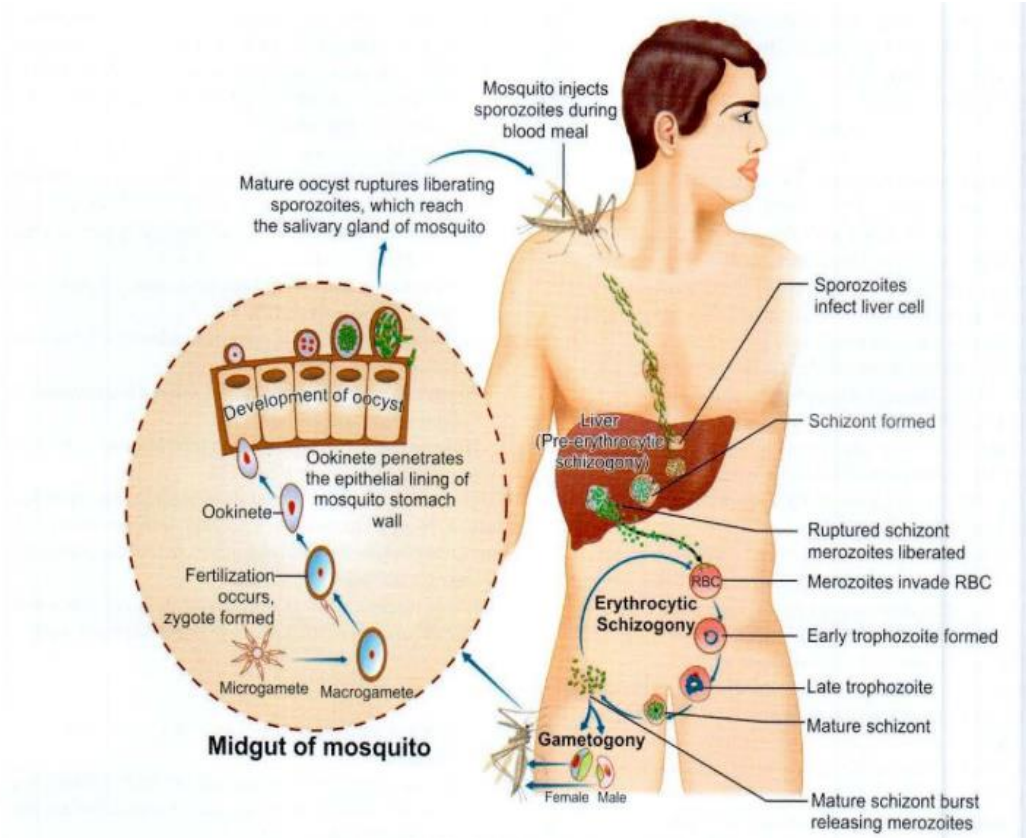

Fig. 2: Life cycle of the *Plasmodium vivax*
Abbreviation: RBC, red blood cell

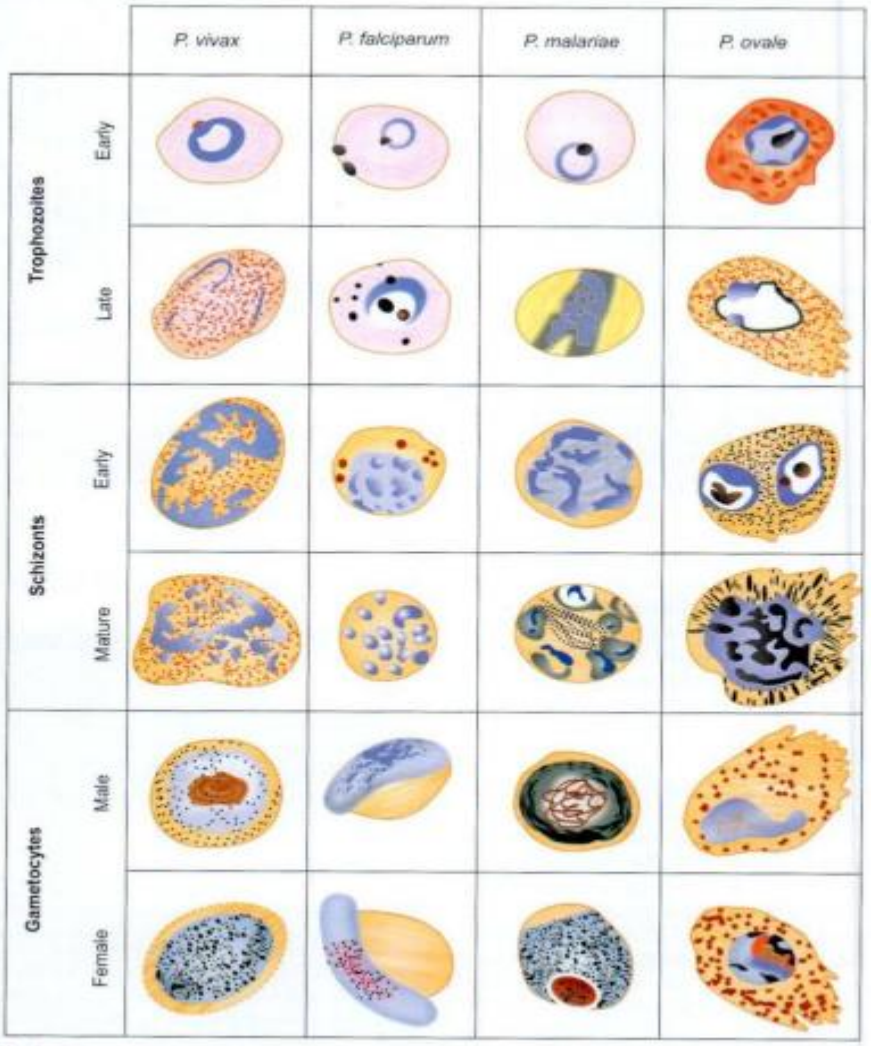

Fig. 3: Malaria parasites—Erythrocytic stages of the four species (Giemsa stain. Magnification 2000X)

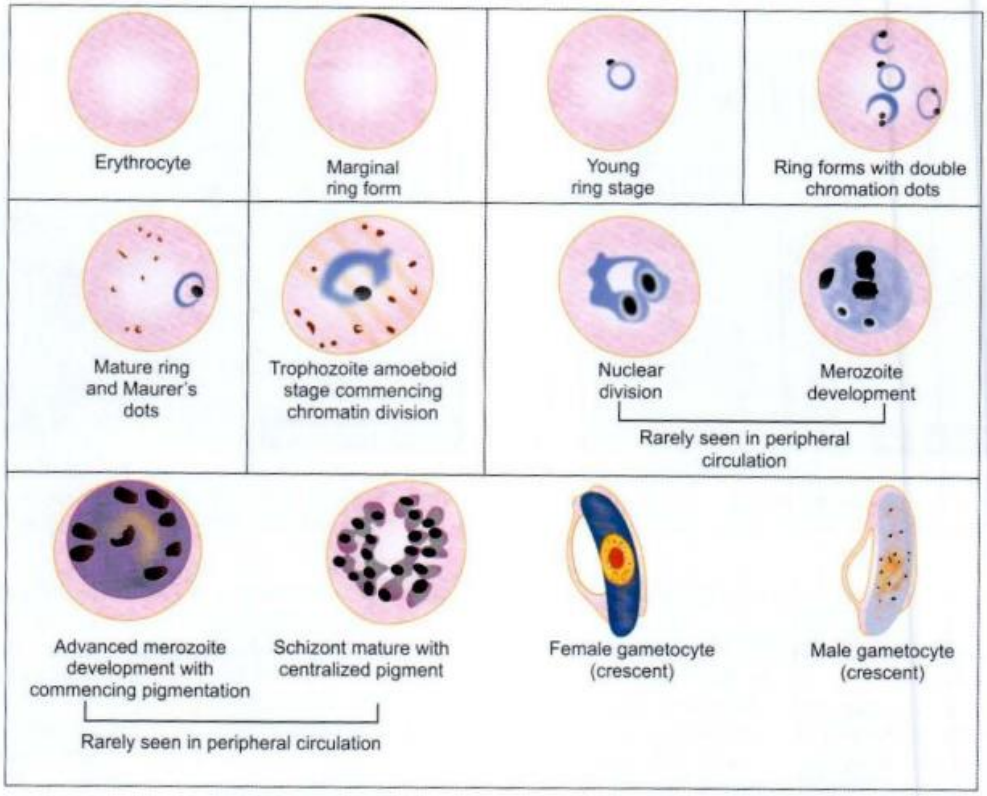

Fig. 8: *Plasmodium falciparum* (Giemsa stain, magnification 2000X)

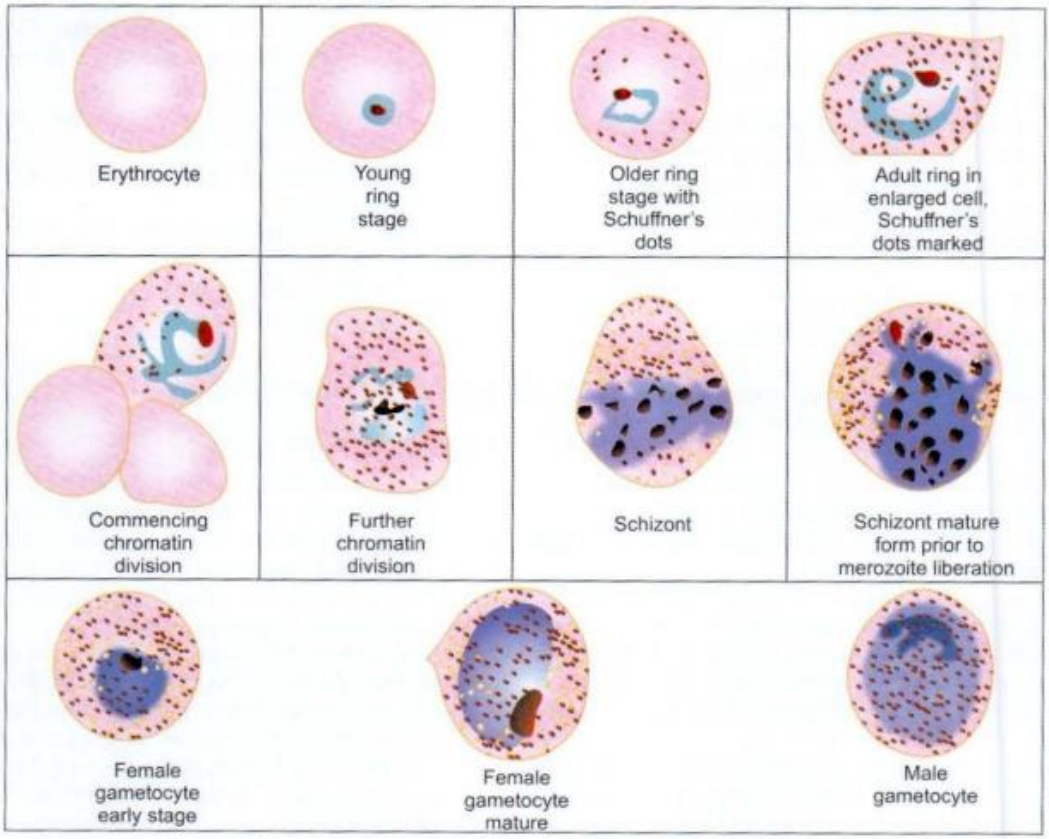

Fig. 5: *Plasmodium vivax* (Giemsa stain, magnification 2000X)

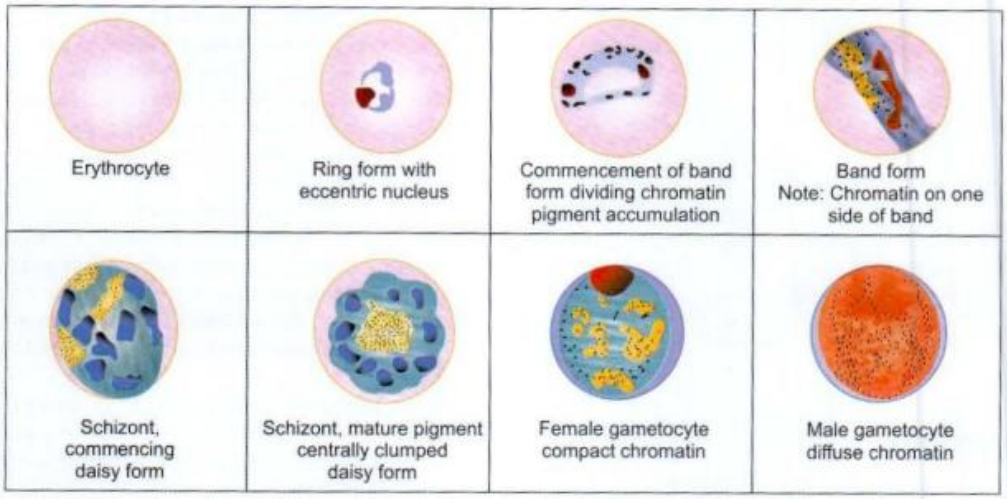

Fig. 11: *Plasmodium malariae* stages of erythrocytic schizogony (Giemsa stain, magnification 2000X)

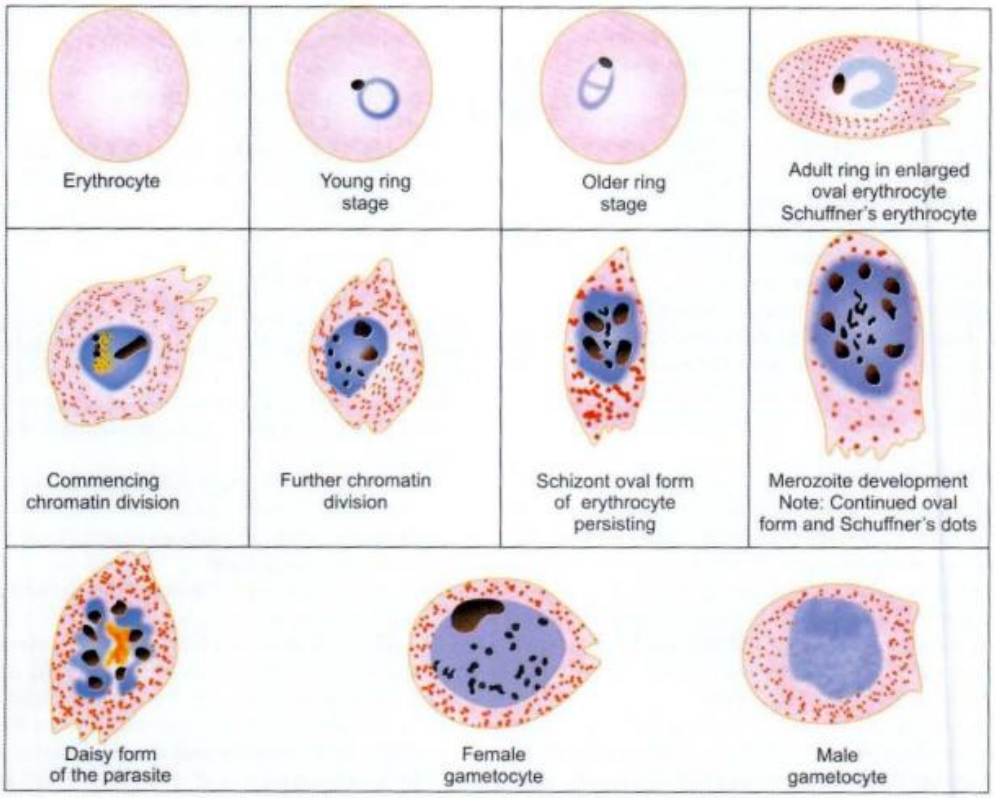

Fig. 12: *Plasmodium ovale* stages of erythrocytic schizogony (Giemsa stain, magnification 2000X)

Table 3: Comparison of the characteristics of plasmodia causing human malaria

	P. vivax	*P. falciparum*	*P. malariae*	*P. ovale*
Hypnozoites	Yes	No	No	Yes
Erythrocyte preference	Reticulocytes	Young erythrocytes, but can infect all stages	Old erythrocytes	Reticulocytes
Stages found in peripheral blood	Rings, trophozoites, schizonts, gametocytes	Only rings and gametocytes	As in *vivax*	As in *vivax*
Ring stage	Large, 2.5 µm, usually single, prominent chromatin	Delicate, small, 1.5 µm, double chromatin, and multiple rings common, accole forms found	Similar to *vivax*, but thicker	Similar to *vivax*, more compact
Late trophozoite	Large irregular, actively ameboid, prominent vacuole	Compact, seldom seen in blood smear	Band form characteristic	Compact, coarse pigment
Schizont	Large filling red cell	Small, compact, seldom seen in blood smear	Medium size	Medium size
Number of merozoites	12–24 in irregular grape-like cluster	8–24 grape-like cluster	6–12 in daisy-head or rosette pattern	6–12 irregularly arranged
Microgametocyte (male gametocyte)	Spherical, compact, pale blue cytoplasm, diffuse nucleus	Sausage or banana-shaped pale blue or pink cytoplasm, large diffuse nucleus	As in *vivax*	As in *vivax*
Macrogametocyte (female gametocyte)	Large, spherical, deep blue cytoplasm, compact nucleus	Crescentic, deep blue cytoplasm, compact nucleus	As in *vivax*	As in *vivax*
Infected erythrocyte	Enlarged, pale, with Schuffner's dots	Normal size, Maurer's clefts, sometimes basophilic stippling	Normal, occasionally Ziemann's stippling	Enlarged, oval fimbriated, prominent Schuffner's dots
Duration of schizogony (days)	2	2	3	2
Prepatent period (days)	8	5	13	9
Average incubation period (days)	14	12	30	14
Appearance of gametocyte after parasite patency (days)	4–5	10–12	11–14	5–6
Duration of sporogony in mosquito (25°C) (days)	9–10	10–12	25–28	14–16
Average duration of untreated infection (years)	4	2	40	4

CRYPTOSPORIDIUM AND ISOSPORA

1. In humans, cryptosporidiosis presents as
   a. Meningitis
   b. Diarrhea
   c. Pneumonia
   d. Asymptomatic infect ion
2. Which stain demonstrates the oocyst of Cryptosporidium best
   a. Hematoxylin-eosin
   b. Gram's stain
   c. Kinyoun modified acid fast stain
   d. Modified trichrome stain
3. All of the following cause diarrhea except
   a. Entamoeba histolytica
   b. Giardia lamblia
   c. Naegleria fowleri

d. Cyclospora caytanensis

4. The oval oocyst of Isospora belli found in human faeces measures
   a. 1-3 µm x 5- 7 µm
   b. 3-5 µm x 8-10 µm
   c. 5-8 µm x 10- 15 µm
   d. 22- 33 µm x 10-15 µm
5. Stool in lsospora belli infection may contain all except
   a. High faecal content
   b. Blood
   c. Fatty acid crystals
   d. Charcot-Leyden crystals
6. Discuss in brief life cycle of Cryptosporidium parvum.

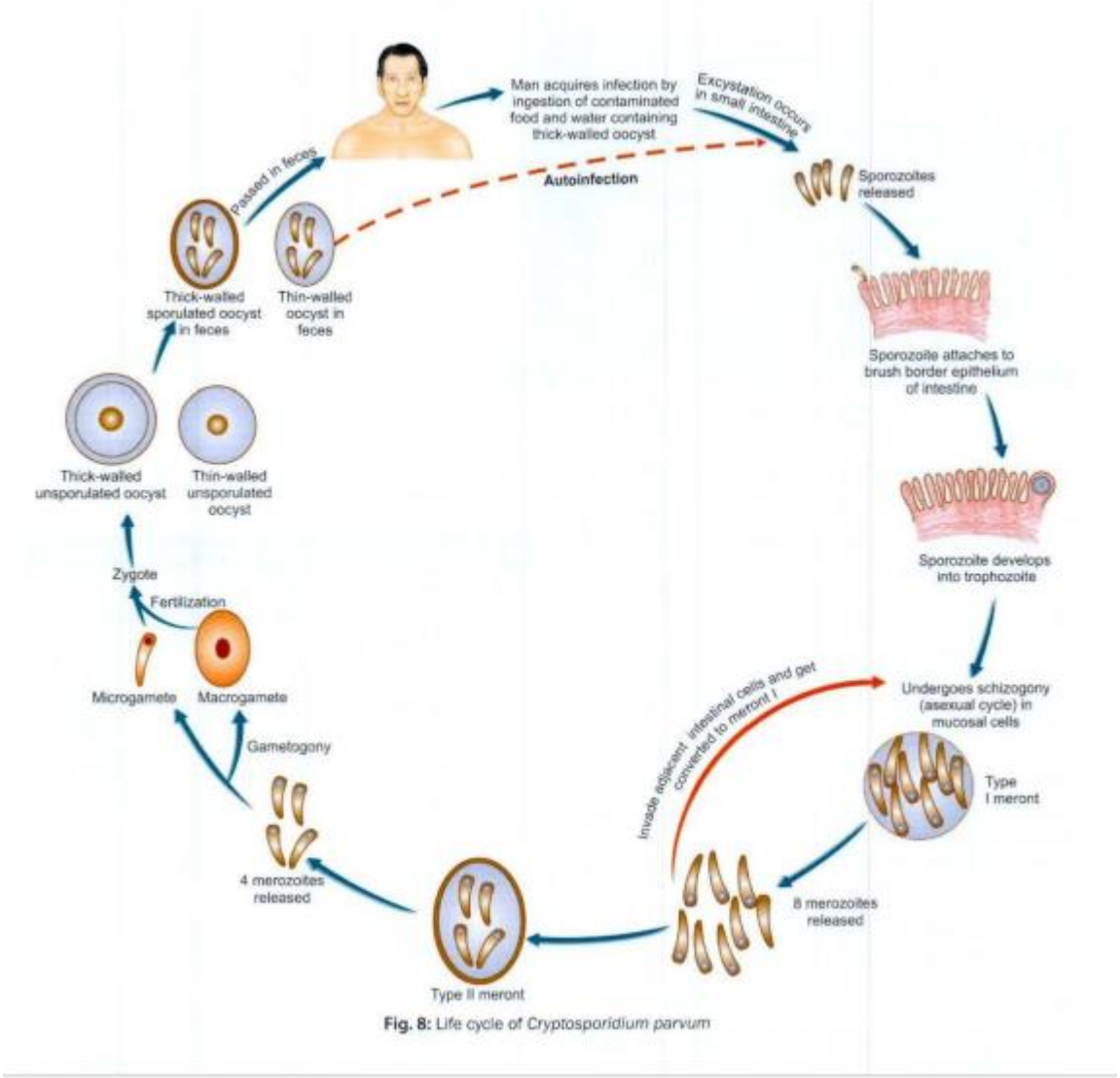

Fig. 8: Life cycle of *Cryptosporidium parvum*