

Sub-phylum Sarcodina

The parasitic amoeba of man

Genera	Troph	Cyst	Habitat	Pathogenicity
Genus <i>Entamoeba</i> :				
<i>Entamoeba Histolytica</i>	+	+	Large intestine of man	+
<i>E. dispar</i>	+	+	L.I of man	–
<i>E. polecki (hog)</i>	+	+	L.I of hog	–
<i>E. coli</i>	+	+	L.I of man	–
<i>E. gingivalis</i>	+	–	mouth	–
Genus <i>Iodamoeba</i>				
<i>I. Butschlii</i>	+	+	L.I	–
Genus <i>Endolimax</i>				
<i>E. nana</i>	+	+	L.I	–
Genus <i>Dientamoeba</i>				
<i>D. Fragilis</i>	+	–	L.I	±
<i>Free-living Pathogenic amoeba</i>				
<i>Naegleria Fowleri</i>	+	+	CNS	+
<i>Acanthamoeba</i>	+	+	CNS eye	+

Entamoeba Histolytica

Named by Schaudin in 1903. This amoeba causes a disease known as amoebiasis, amoebic colitis or amoebic dysentery.

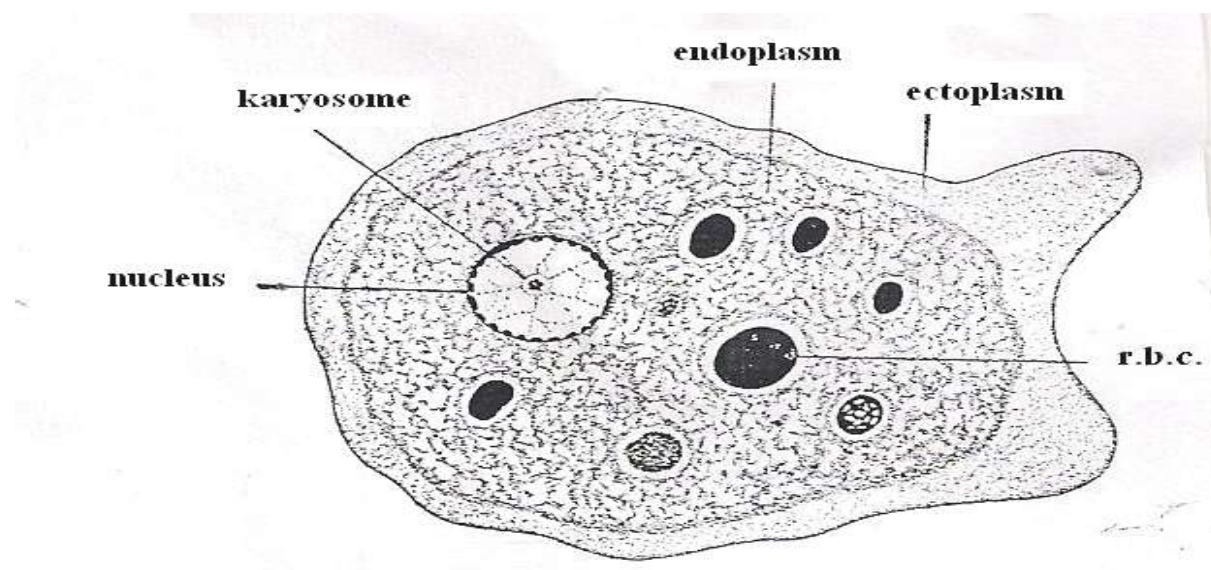
It occurs in all areas of the world but it is more prevalent in tropical and sub-tropical areas and the rates of infection are higher in crowded areas with poor personal hygiene and low socioeconomic status e.g. mental hospitals, prisons and children homes.

This amoeba inhabits the large intestine (colon) mainly in cecum and sigmoid - rectal regions. There are 4 forms in the life cycle of *E. histolytica* but only two forms are seen in stool specimen.

Trophozoite (vegetative form): A stage in the life cycle of a protozoan parasite in which the cells are taking in nourishment and divided by binary fission.

In fresh unstained smear, *E. histolytica* trophozoites are active, progressive with directional motion. Ectoplasm clear, well differentiated from granular endoplasm, pseudopodia are elongated with finger – like projection. The trophozoite contain single spherical nucleus surrounded by nuclear membrane. The chromatin materials found on inner surface of nuclear membrane with regularly distributed granule and in the center of the nucleus there is a karyosome.

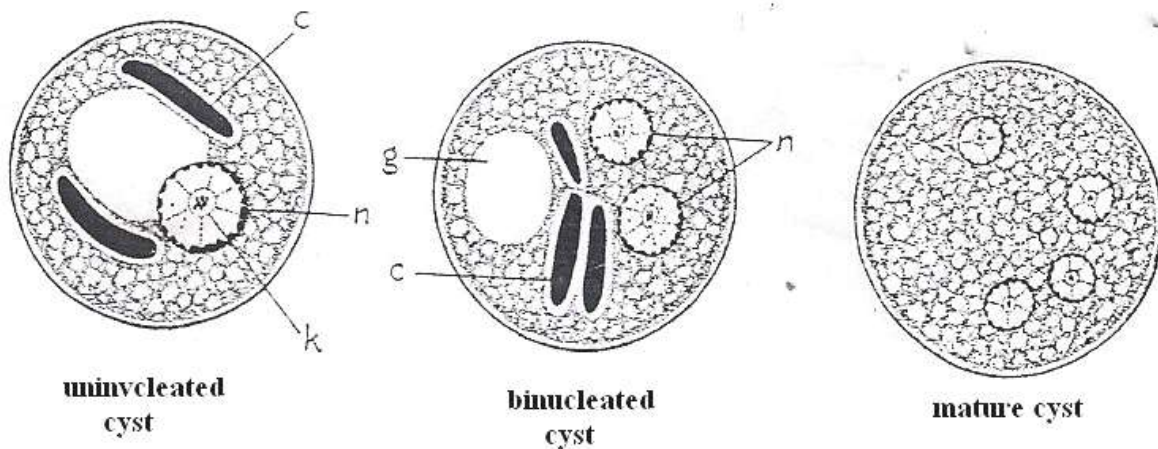
Immediately around the karyosome there is a clear halo and a chromatic fibrils extend between nuclear membrane and a halo. The nucleus is called histolytica type nucleus. The trophozoite ingests RBCs which may be seen in fresh preparation or in stained smear.



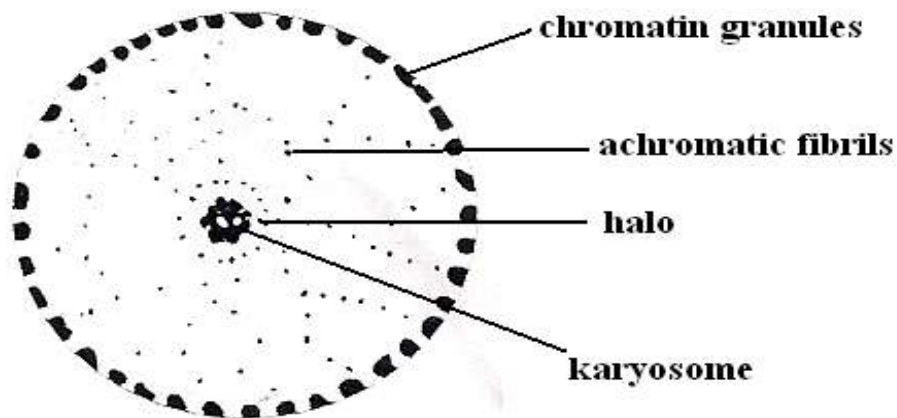
***E. histolytica* trophozite**

Cyst: rounded or spherical in shape with smooth cystic wall, the cytoplasm contains glycogen mass and one or two occasionally more dark-staining sausage or cigar shaped with rounded ends chromatoidal bodies. Chromatoidal bodies become smaller and disappear as the cyst mature.

The cyst may contain from 1 – 4 histolytica type nuclei and the infective stage is mature quadrinucleated cyst.



E. histolytica cysts

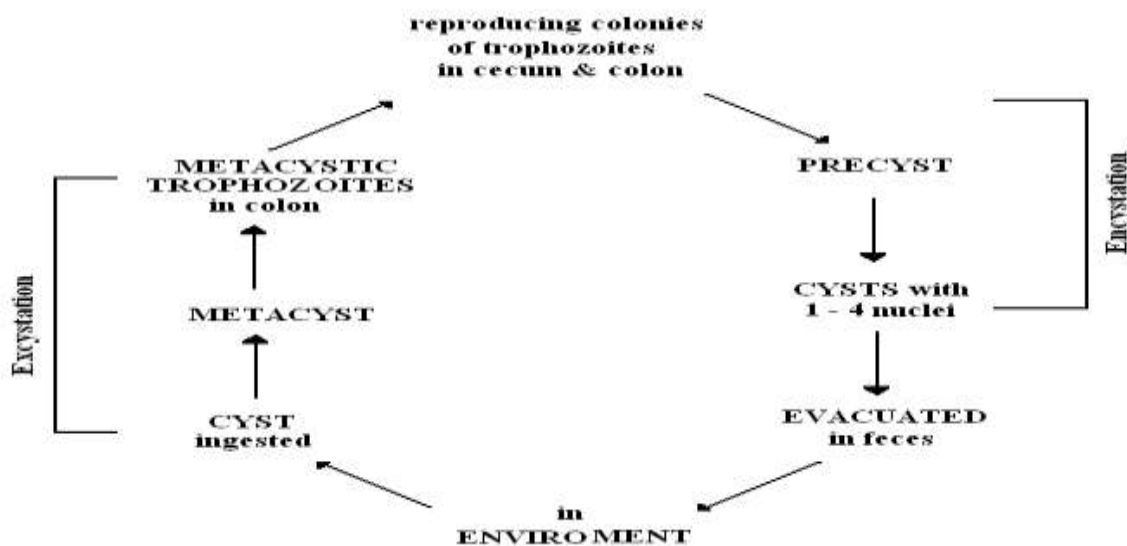


Histolytica type nucleus

Life cycle

E. histolytica life cycle is simple and direct. The parasite has trophozoite, precyst, cyst and metacystic stage during the life cycle but only trophozoite and cyst stages are recognized in feces. Trophozoites are easily destroyed in outside environment and degenerating within minutes. Cysts can remain alive outside the host for weeks or months especially under damp conditions. The cysts resist to routine chlorination and killed by freezing and desiccation. This amoeba inhabits the lumen of the colon.

Encystation occurs in the intestinal lumen after transformation of cyst to precystic stage. Either before the stool is passed or soon thereafter, the nucleus of the cyst divides into two, then each of the two divides once again so that the mature cyst typically has 4 nuclei. When mature cyst is ingested with contaminated food or drink by a new host, excystation occurs in the lumen of small intestine, here, under the influence of neutral or alkaline digestive juices, and the activity of the amoebae, the cyst wall disintegrates. The liberated 4-nucleated metacystic amoeba divides into 8 small amoebulae and moves downward to the large intestine.



Life cycle of *E. histolytica*

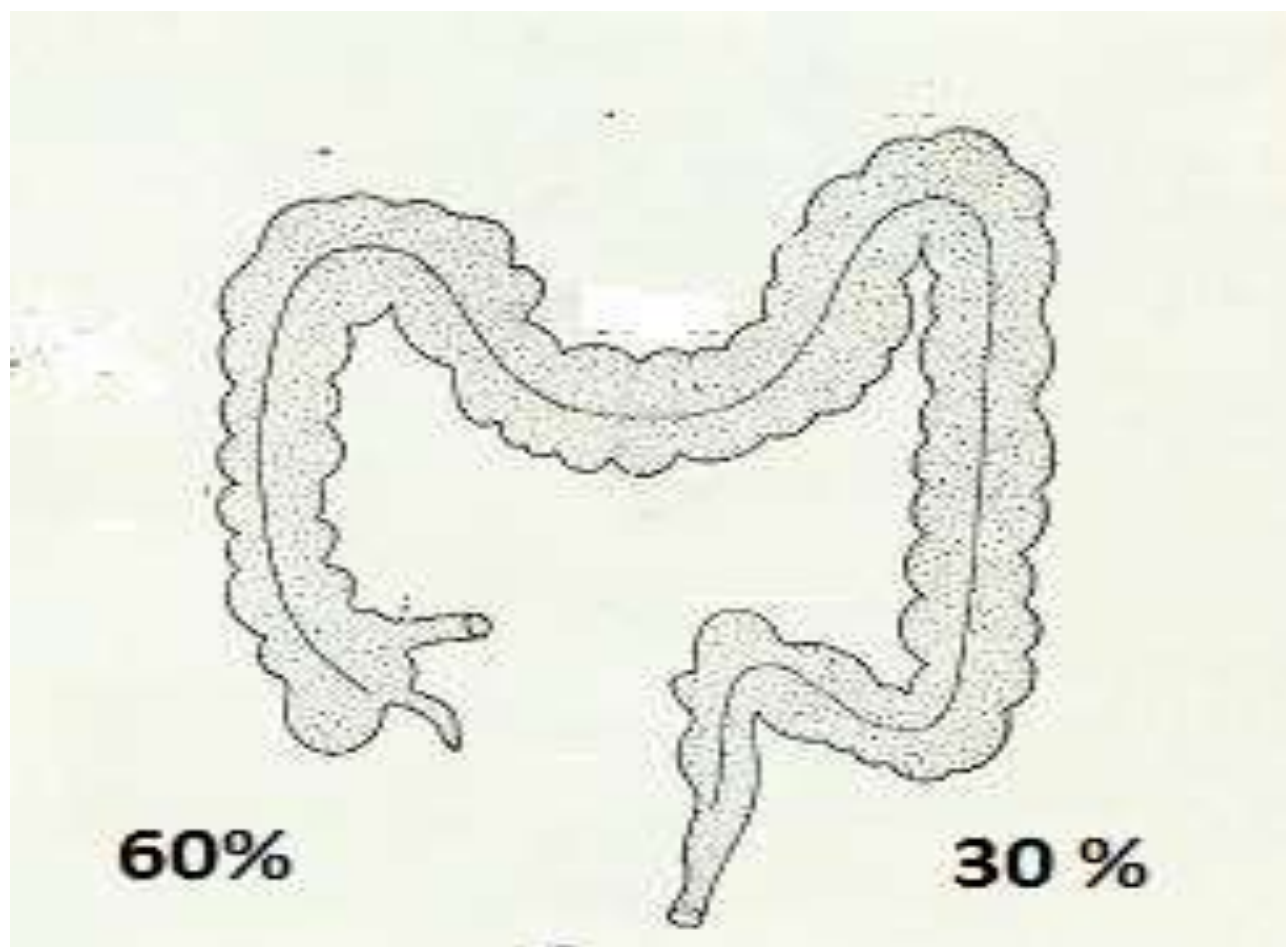
Types of *E. histolytica* Infection in Man

There are two types of amoebiasis:

- 1- Intestinal amoebiasis (primary infection).
- 2- Extra-intestinal amoebiasis (secondary infection).

Sites of Intestinal Infection

The infection may occur at any point of large intestine, but the most frequent primary sites are the cecum (about 60%) and the sigmoidorectal region (about 30%).



***E. histolytica* infection occur via fecal – oral route . food and water becoming contaminated through exposure to human feces or through flies . cyst carriers are the main reservoirs . sexual transmission also occur mainly in homosexuals .**