

Entamoeba spp.

Kingdom: Protista

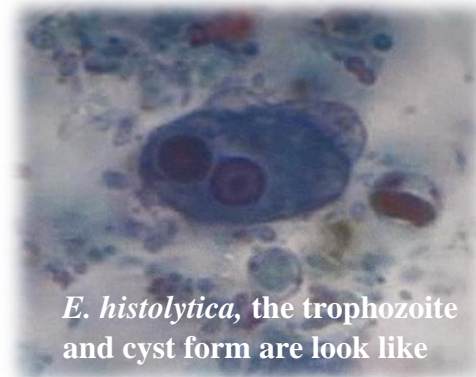
Subkingdom: Protozoa

Phylum: Sarcomastigophora

Class: Lobosea

Order: Euamoebida

Genus: *Entamoeba*



E. histolytica, the trophozoite and cyst form are look like

Species 1: *E. histolytica*

Host: The life cycle of *E. histolytica* begins and ends inside one single host, i.e., an individual human, Cat, or Dog.

Geographical distribution: *E. histolytica* has been found throughout the world. It is more prevalent in the tropics and subtropics than the cooler climates.

Site of infection: Trophozoites of *E. histolytica* live in the mucous and sub mucous layers of large intestine.

Clinical signs: The condition produce by ameba in humans is known as **amebiasis**. It causes amebic dysentery, a condition in which the infection is confined to the intestinal canal and is characterized by the passage of blood and mucus in the stool, sometimes cause amebic colitis that range from mild watery diarrhea to explosive bloody dysentery.

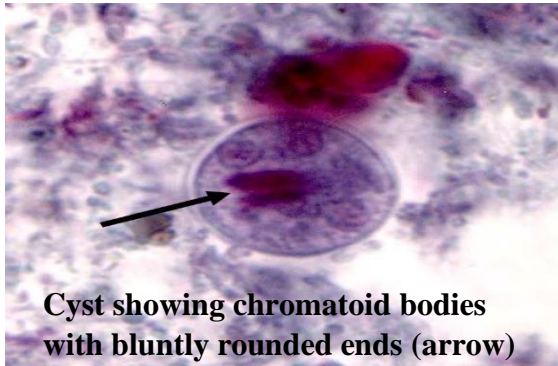
Pathogenicity: These parasites can infect 50 million human beings across the globe. The invasion in human hosts vary from showing zero symptoms to being fatal, its known to kill over 55,000 people every year.

E. histolytica is an important human pathogen causing amoebic dysentery as well as hepatic amoebiasis. Intestinal lesions are acute amebic dysentery and chronic intestinal amebiasis. Extra intestinal lesions include: liver amebic hepatitis and amebic liver abscess, Lung's abscess, Brain (a small cerebral abscess), Spleen abscess, Skin (granulomatous lesion (ameboma) near visceral lesion, e.g., liver).

Diagnosis: Are found residing in the walls of the large intestine. It has the ability to survive there for weeks or maybe years by causing asymptomatic infection. The incubation period is generally 4-5 days.

The cyst of *E. histolytica* typically has 4 nuclei. The peripheral chromatin fine, evenly distributed. The karyosome small, round, and centrally located. The size of the trophozoite is 10-30 μm in diameter, with finger-like pseudopodia.

The laboratory diagnosis can be made by: 1-Microscopic examination, 2-Biochemical Methods, 3- Culture and Isoenzymes, 4- Antibody Detection, 5- Antigen Detection, 6-Molecular Biology-Based Diagnostic Tests and PCR.

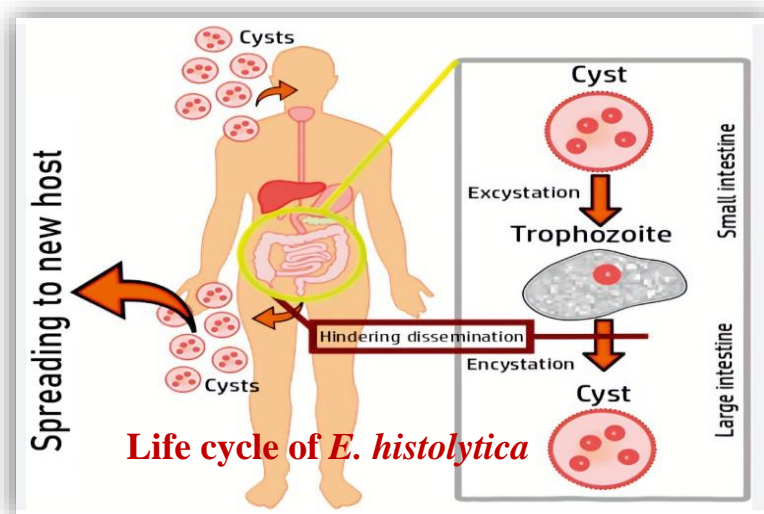


Life Cycle:

Stage 1: Cyst infection occurs by ingestion of mature cysts through fecally contaminated water or food. Due to protection from walls, cysts survive several days and sometimes weeks.

Stage 2: Excystation is the process by which cysts transform into trophozoites. When the cysts enter the ileum of the small intestine of the host, the process of excystation begins. Trophozoites are released in the small intestine and from here they migrate to the large intestine.

Stage 3: Trophozoites are unicellular parasites that measure from 14 -18 μm in diameter. They multiply in the small intestine by binary fission to produce cysts that exit via human stool.



Species 2: *Entamoeba coli*

Entamoeba coli is a non-pathogenic amoeba with worldwide distribution. Its life cycle is similar to that of *E. histolytica* but it does not have an invasive stage and do not ingest red blood cells.

Hosts: Humans are considered the main host for all *Entamoeba* species except for *Entamoeba polecki*, which is usually associated with primates and swine.

Geographic Distribution: These amoebae are found worldwide. Prevalence is highest in areas with inadequate sanitation.

Site of infection: It is transmitted through fecal-oral contact, and the mature cyst can be found in contaminated water. Typically, inhabit the large intestinal tract and can be identified in diagnostic stool specimens.

Diagnoses: The cyst of *E. coli* diameter (10-35 μ m), has 8 nuclei, it's the cytoplasm granular in appearance. Food vacuoles are not present., Chromatoid bodies are not frequently seen but when present they are usually splinter-like with pointed ends. The karyosome is irregular, large, and eccentric. The size of the trophozoite is 20-40 μ m in diameter, and the outline of the trophozoite has no prominent pseudopodia.

. *E. coli* can distinguish by: Microscopy, culture methods, isoenzyme analysis, antibody detection tests, antigen detection tests, immunochromatographic assays, and DNA-based diagnostic tests.



Cyst of *E. coli*



Trophozoite of *E. coli*

The trophozoites of *E. coli* with single nucleus contains a large eccentrically located karyosome distributed peripheral chromatin.

Clinical signs: It is a commensal amoeba but doesn't invade tissues, none of these amoebae cause symptomatic disease in humans; colonization is noninvasive. However, the presence of trophozoites or cysts of nonpathogenic amoebae in stool indicates that the person from whom the specimen was collected had fecal exposure.

Life cycle: Both cysts and trophozoites of these species are passed in stool and are considered diagnostic.

1- Cysts are typically found in formed stool, whereas trophozoites are typically found in diarrheal stool. Intestinal colonization with nonpathogenic amoebae occurs after ingestion of mature cysts in fecally contaminated food, water, or fomites

2- Excystation occurs in the small intestine.

3- And trophozoites are released, which migrate to the large intestine. The trophozoites multiply by binary fission and produce cysts, and both stages are passed in the feces.

Because of the protection conferred by their cell walls, the cysts can survive days to weeks in the external environment and are responsible for transmission. Trophozoites passed in the stool are rapidly destroyed once outside the body and, if ingested, would not survive exposure to the gastric environment.