

Difference Between Cryptosporidium and Giardia

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Key Difference - Cryptosporidium vs Giardia

[Parasites](#) are organisms that cause harm and [diseases](#) to the host once infected. There are different routes in which a parasite could enter the host. The parasites are administered mainly in the oral route. Therefore, gut [infections](#) are most prevalent. Gut infections are mainly due to the consumption of contaminated food and beverages. *Cryptosporidium* and *Giardia* are two parasitic [protozoans](#) found in contaminated waterways and cause gut borne infections of humans. *Cryptosporidium* is a parasitic microorganism that causes Cryptosporidiosis. The disease is a resultant of the process known as excystation of *Cryptosporidium*. *Giardia* is a microorganism that causes Giardiasis, which is a diarrheal infection in humans. The excystation process of *Giardia* initiates the infection. The **key difference** between *Cryptosporidium* and *Giardia* is the type of disease they cause. ***Cryptosporidium* causes Cryptosporidiosis whereas *Giardia* causes Giardiasis.**

What is Cryptosporidium?

Cryptosporidium is a parasitic protozoan which is microscopic and infects human hosts. *Cryptosporidium hominis* and *Cryptosporidium parvum* are the two main species that cause the disease Cryptosporidiosis. The life cycle of *Cryptosporidium* has the oocyst stage, sporozoite stage and the trophozoite stage. [Ingestion](#) of the sporulated oocyst is the first stage of the life cycle. The oocyst is highly resistant to harsh environmental conditions. The thick-walled oocyst protects the spores well. Once ingested, the action of bile salts and the optimum body temperature favour the excystation of the oocyst. Upon excystation, the spores are released to the gut environment, which then develop into the sporozoites. Sporozoite is spindle-shaped and highly motile. They glide to the [intestines](#) where they reside themselves in the intestinal wall. The sporozoite can then undergo both [sexual and asexual reproduction](#). Sexual reproduction takes place via formation of microgamonts and macrogamonts. Upon [fertilization](#) they develop into mature oocysts. Mature oocyte can then undergo excystation to further manifest the infection. Asexual reproduction takes place via the formation of type I and II meronts.

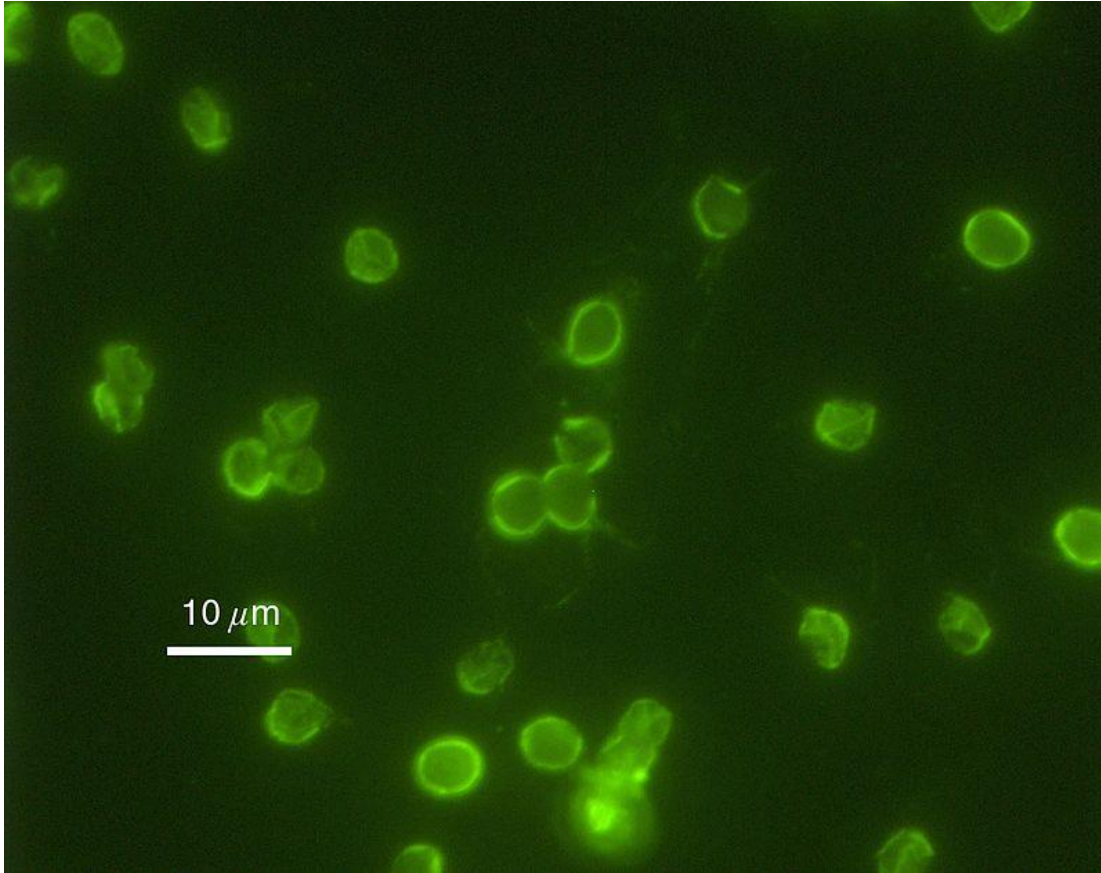


Figure 01: Cryptosporidium

Cryptosporidiosis, also known as Crypto is known as watery diarrhoea as it is the main symptom of the disease. The other symptoms include stomach cramps, nausea and [dehydration](#). Crypto can also be completely asymptomatic. The spread of the [pathogen](#) takes place mainly through the contaminated waterways and consumption of contaminated water. Awareness of preventing environmental pollution is important to reduce the risk of the infection, as it can be [epidemic](#).

What is Giardia?

Giardia is one of the most common waterborne parasitic protozoan that causes diarrheal infections. They are known to cause the disease called Giardiasis upon consumption of *Giardia* contaminated water. *Giardia lamblia* is the most common disease-causing species of *Giardia*.

The life cycle of *Giardia* can be used to describe the process of excystation. The parasite is flagellated, and the life cycle alters between the [cyst](#) phase and the [trophozoite](#) phase. When the mature cysts of *Giardia* are ingested they reach the intestines. The cysts are resistant and can survive the harsh environmental conditions. When the cysts reach the small intestines, they undergo excystation and release the trophozoites. In *Giardia*, each cyst can

produce two trophozoites. The trophozoites reside in the lumen of the small intestine, and they remain attached to the mucosa of the small intestine. This leads to the infection.

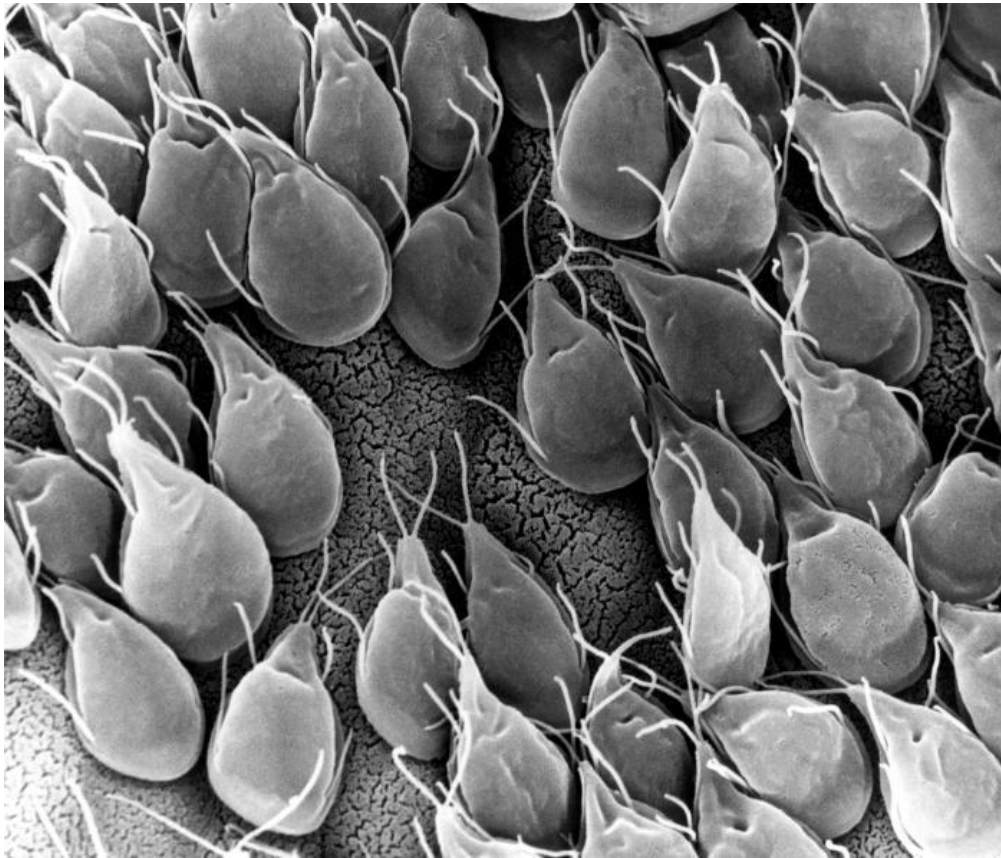


Figure 02: Giardia

The common symptoms of Giardiasis are diarrhoea, gas, greasy stools that tend to float, stomach or abdominal cramps, upset stomach or nausea/vomiting and dehydration (loss of fluids). As the infection is contacted via contaminated waterways, it is important to create awareness about environmental cleanliness.

What are the Similarities Between Cryptosporidium and Giardia?

- Both are protozoan parasites.
- Both are microscopic.
- Both are present in contaminated waterways.
- Both cause in gut infections termed as diarrheal diseases.
- Both undergo excystation in the intestines.
- Both organisms have a cyst phase and a trophozoite phase.
- The cysts in both organisms are resistant structures.
- The trophozoite stage is motile in both organisms.

- Both result in disease symptoms such as diarrhoea, nausea, dehydration and stomach cramps.

What is the Difference Between Cryptosporidium and Giardia?

Cryptosporidium vs Giardia	
<i>Cryptosporidium</i> is a parasitic microorganism that causes Cryptosporidiosis. The disease is a resultant of the process known as excystation of <i>Cryptosporidium</i> .	<i>Giardia</i> is a microorganism that causes Giardiasis, a diarrheal infection in humans. The excystation process of <i>Giardia</i> initiates the infection.
Disease Caused	
Cryptosporidiosis is the disease which caused by <i>Cryptosporidium</i>	Giardiasis is the disease which caused by <i>Giardia</i>
Flagellated or Not	
<i>Cryptosporidium</i> is non – flagellated.	<i>Giardia</i> is flagellated.
Examples	
<i>Cryptosporidium hominis</i> and <i>Cryptosporidium parvum</i> .	<i>Giardia lamblia</i> .

Summary - Cryptosporidium vs Giardia

Cryptosporidium and *Giardia* are two protozoan parasites which produce cysts that can lead to gut borne infections namely Cryptosporidiosis and Giardiasis. These are diarrheal diseases. *Cryptosporidium* and *Giardia* are microscopic and reside in the small intestines where they undergo excystation, which manifests the disease symptoms. Both the parasites enter via the oral route and through the consumption of water and food contaminated with the parasite. This is the difference between *Cryptosporidium* and *Giardia*.

Reference:

1. Leitch, Gordon J, and Qing He. "Cryptosporidiosis-an overview." Journal of Biomedical Research, Editorial Department of Journal of Biomedical Research, Jan. 2011. [Available here](#)
2. Wolfe, M S. "Giardiasis." Clinical Microbiology Reviews, U.S. National Library of Medicine, Jan. 1992. [Available here](#)

Image Courtesy:

- 1.'Cryptosporidium parvum 01' (Public Domain) via [Commons Wikimedia](#)
- 2.'Giardia-spp.--infected--gerbil-intestine'By Dr. Stan Erlandsen (1988) - Public Health image Library (PHIL) -- image #11632, (Public Domain) via [Commons Wikimedia](#)

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