



Cyclospora cayetanensis and Cyclosporiasis

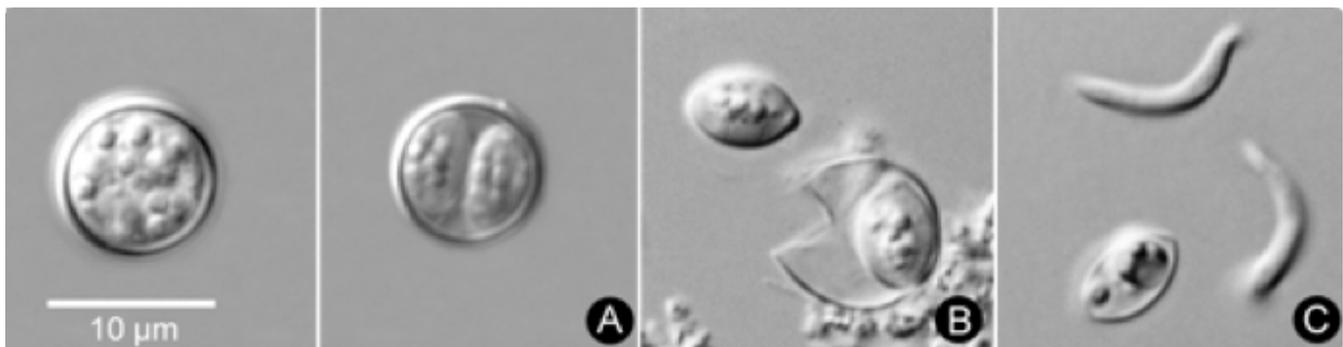
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2013 Outbreak

On June 28, 2013, federal and State health authorities became aware of an irregular occurrence in Iowa of cyclosporiasis, an infection caused by the single-celled food- or water-borne parasite called *Cyclospora cayetanensis*, the only species found in humans. The organism, usually associated with imported fresh produce, may cause diarrhea, nausea, and vomiting. Some may also experience abdominal pain, aches and pains, cramping, and fever. About 1,465 people contracted cyclosporiasis linked to raspberries from Guatemala in 1996, as did another 804 persons in 1997. Basil from Peru caused a 2005 outbreak among 592 persons. Cyclosporiasis is relatively rare in the United States, and most healthy individuals will recover from the infection without treatment.

As of September 4, 2013, more than 672 similar infections were identified in 24 states, with the majority in Iowa, Nebraska, and Texas. More than 45 persons were hospitalized. Epidemiologists in Iowa and Nebraska and the US FDA stated that the outbreak was linked to salad mixes from Taylor Farms de Mexico that reached consumers through Olive Garden and Red Lobster Restaurants, both owned by Darden Restaurants of Orlando, FL. But the outbreak source for the other states remains to be identified. Although Darden Restaurants declared that they do not use Taylor Farms salad in any states besides Iowa and Nebraska, there was a Florida woman who tested positive for the infection after eating salad at Olive Garden prior to her illness.



Unsporulated oocyst (far left); sporulating oocysts with two immature sporocysts (A); Mechanically ruptured oocyst (B); Two free sporozoites, the infective stage of the parasite (C). Accessed September 4, 2013, from <http://www.cdc.gov/parasites/cyclosporiasis/>

Complications to the Investigation

Several factors affect the investigation of the outbreaks:

- It takes several days or even weeks before patients experience symptoms, such as diarrhea and nausea, complicating the investigation. Patients may not recall the food that caused the illness.
- Not everyone who ate the contaminated food would have fallen ill because the parasite was not evenly distributed in the salad. Some diners might have ingested a large number of organisms; others, only a few or none at all.
- Sickened individuals in other states did not appear to share a common source of infection.

“What Appears to Be Most Likely Is Likely the Answer”

Because a common source for all the closely reported infections has not been identified, a consulting agency retained by Taylor Farms is considering that “what appears to be most likely is likely the answer.” The consulting agency is considering several possibilities:

- Contaminated produce from Mexico was shipped north through Texas and ended in Iowa and Nebraska
- Taylor Farms may have crop contamination problems that affected their facilities
- The infection is an area-wide contamination issue (e.g., from a water source) that might have also affected nearby crops.

Treatment and Prevention

As of the present time, cyclosporiasis may be treated with an antibiotic prescribed by a physician. Cyclosporiasis is prevented by avoiding food and water contaminated with feces, which may carry the parasite. *Cyclospora* oocysts are unlikely to be killed with chlorine or iodine treatment.

References

- Andrews, J. August 23, 2013. National Cyclospora Outbreak: What We Do and Don't Know. http://www.foodsafetynews.com/2013/08/what-we-do-and-dont-know-about-the-national-cyclospora-outbreak/?goback=%2Egde_4151388_member_268025728#%21 (accessed September 4, 2013)
- CDC. Parasites – Cyclosporiasis. <http://www.cdc.gov/parasites/cyclosporiasis/> (accessed September 4, 2013)
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