MAYO CLINIC LABORATORIES

# Test Definition: GIAR

Giardia Antigen, Feces

## Overview

### Useful For

Sensitive screening for the detection of *Giardia* antigens present in fecal specimens

### Testing Algorithm

The following algorithms are available:

-Parasitic Investigation of Stool Specimens Algorithm

-Laboratory Testing for Infectious Causes of Diarrhea

### Special Instructions

- Parasitic Investigation of Stool Specimens Algorithm
- Laboratory Testing for Infectious Causes of Diarrhea

### Method Name

Enzyme-Linked Immunosorbent Assay (ELISA)

### NY State Available

Yes

## Specimen

### Specimen Type

Fecal

### Ordering Guidance

Duodenal, colonic wash, or small bowel aspirates are **not acceptable** for this test. If giardiasis is suspected, order OPE / Ova and Parasite, Travel History or Immunocompromised, Feces.

### Specimen Required

**Submit only 1 of the following specimens:**

**Preferred:**

**Specimen Type:** Preserved feces

**Supplies:**

-Formalin 10% Buffered Neutral 15 mL (T466)

-Stool Collection Kit, Random (T635)

**Container/Tube:**

**Preferred:** Fecal container with 10% buffered formalin preservative

**Acceptable:** SAF (sodium acetate formalin)

**Specimen Volume:** 5 grams

**Specimen Stability Information:** Ambient (preferred) 60 days

**Acceptable:**
**Specimen Type:** Unpreserved feces
**Supplies:**
-Stool container, Small (Random), 4 oz (T288)
-Stool Collection Kit, Random (T635)
**Container/Tube:** Fecal container
**Specimen Volume:** 5 grams
**Specimen Stability Information:** Frozen 60 days

## Forms

If not ordering electronically, complete, print, and send 1 of the following forms with the specimen:
-Microbiology Test Request (T244)
-Gastroenterology and Hepatology Test Request (T728)

## Specimen Minimum Volume

2 grams

## Reject Due To

| | |
|---|---|
| Grossly bloody feces (containing no visible specimen)<br>Very mucoid feces<br>Specimens preserved in ECOFIX (green cap), C and S (orange cap), or merthiolate formalin (MF)<br>Duodenal aspirates<br>Small bowel aspirates | Reject |

## Specimen Stability Information

| Specimen Type | Temperature | Time | Special Container |
|---|---|---|---|
| Fecal | Varies | | |

## Clinical & Interpretive

### Clinical Information

*Giardia duodenalis* (also known as *Giardia lamblia, Giardia intestinalis*) is a flagellated protozoan parasite found in contaminated natural streams, lakes, and surface water municipal reservoirs. Several animals may serve as a host for *G duodenalis*, including dogs and beavers. Humans become infected when ingesting the environmentally resistant parasite cysts in water, food, and by the fecal-oral route (eg, on hands or fomites).

Following ingestion, each cyst releases two trophozoites, which infect the small intestine by attaching to the mucosa with a ventral sucking disc. Infection may be associated with a variety of outcomes ranging from asymptomatic disease (estimated to occur in 50% of infected individuals) to acute and chronic giardiasis. When present, symptoms generally appear 7 to 14 days after infection and consist of watery diarrhea, malaise, malodorous steatorrhea, flatulence, abdominal cramping, nausea or vomiting, weight loss, and low-grade fever. Less commonly, patients experience constipation and urticaria. Symptoms will resolve in most patients after a period of several weeks. However, approximately 15% to 20% will remain chronically infected without treatment and experience ongoing loose stools, weight loss, malabsorption, steatorrhea, abdominal cramping, flatulence, and burping. Longstanding malabsorption may result in vitamin deficiencies and hypoalbuminemia. Acquired lactose intolerance may also occur and persist for months after successful parasite eradication.

Giardiasis is the most common intestinal parasitic infection in the United States reported to the Centers for Disease Control and Prevention and is a common cause of diarrhea in children (especially in daycare centers), travelers, and campers or hikers. It is also responsible for waterborne epidemics. Although *Giardia* parasites (cysts and trophozoites) may be seen using the microscopy-based stool parasitic exam (OPE / Ova and Parasite, Travel History or Immunocompromised, Feces), this is an insensitive method for detection and requires examination of three or more specimens. Instead, detection of parasite antigen or DNA is recommended for optimal sensitivity. The Giardia antigen test is ideal for settings in which giardiasis is specifically suspected (eg, outbreak scenarios), whereas the multiplex gastrointestinal polymerase chain reaction panel (GIP / Gastrointestinal Pathogen Panel, PCR, Feces) is better suited for evaluating multiple potential causes of diarrhea, including parasitic, viral, and bacterial pathogens.

For more information about diagnostic tests that may be of value in evaluating patients with diarrhea see the following:

-Parasitic Investigation of Stool Specimens Algorithm
-Laboratory Testing for Infectious Causes of Diarrhea

### Reference Values

Negative

### Interpretation

A positive enzyme-linked immunosorbent assay indicates the presence in a fecal specimen of *Giardia* antigens.

Interpretation of results should be correlated with patient symptoms and clinical picture.

### Cautions

Small numbers of organisms residing only in the duodenum may not yield a positive test result.

*Giardia* antigen detection should be used as an aid in diagnosis of giardiasis. A single diagnostic assay should not be used as the only criteria to form a clinical conclusion.

Testing of at least 2 consecutive fecal specimens by enzyme-linked immunosorbent assay is recommended before considering the results negative.

Feces containing large amounts of leukocytes or red blood cells may give false-positive results.

### Supportive Data

As per the manufacturer, the assay has a sensitivity of 96%, specificity of 97%, and a positive predictive value of 95%.

### Clinical Reference

1. Garcia LS, Arrowood M, Kokoskin E, et al. Practical guidance for clinical microbiology laboratories: Laboratory diagnosis of parasites from the gastrointestinal tract. Clin Microbiol Rev. 2017;31(1):e00025-17
2. Hanson KL, Cartwright CP. Use of an enzyme immunoassay does not eliminate the need to analyze multiple stool specimens for sensitive detection of *Giardia lamblia*. J Clin Microbiol. 2001;39(2):474-477
3. Centers for Disease Control and Prevention (CDC) National Center for Emerging and Zoonotic Infectious Diseases (NCEZID), Division of Foodborne, Waterborne, and Environmental Diseases (DFWED): Parasites-*Giardia*. CDC; Updated May 19, 2022. Accessed August 28, 2023. Available at www.cdc.gov/parasites/giardia/index.html

## Performance

### Method Description

*Giardia* antigens present in the stool supernatant are captured by antibodies coating the wells of a microtiter plate. The bound antigen is sandwiched by the addition of a second antibody, and the signal is amplified by adding biotin-streptavidin horseradish peroxidase. Blue color develops with the presence of bound antigen. The reaction is stopped with the addition of acid and read visually or with the aid of a spectrophotometer.(Rosenblatt JE, Sloan LM, Schneider SK. Evaluation of an enzyme-linked immunosorbent assay for the detection of *Giardia lamblia* in stool specimens. Diagn Microbiol Infect Dis. 1993;16(4):337-341; package insert: ProSpecT Giardia Microplate Assay. Oxoid; 03/2012)

### PDF Report

No

### Day(s) Performed

Monday through Friday

### Report Available

1 to 3 days

### Specimen Retention Time

Fresh/Frozen: 1 week; Preserved specimens: 1 week

### Performing Laboratory Location

Mayo Clinic Laboratories - Rochester Main Campus

## Fees & Codes

### Fees

- Authorized users can sign in to Test Prices for detailed fee information.
- Clients without access to Test Prices can contact Customer Service 24 hours a day, seven days a week.
- Prospective clients should contact their account representative. For assistance, contact Customer Service.

### Test Classification

This test has been cleared, approved, or is exempt by the US Food and Drug Administration and is used per manufacturer's instructions. Performance characteristics were verified by Mayo Clinic in a manner consistent with CLIA requirements.

### CPT Code Information

87329

### LOINC® Information

| Test ID | Test Order Name | Order LOINC® Value |
|---|---|---|
| GIAR | Giardia Ag, F | 6412-1 |

| Result ID | Test Result Name | Result LOINC® Value |
|---|---|---|
| 24085 | Giardia Ag, F | 6412-1 |