Uni-Gold™ Cryptosporidium

20 Tests

Store Kit at +2 to +30°C

REF **1206620**

Pour d'autres langues
Für andere Sprachen
Para otras lenguas
Per le altre lingue
Dla innych języków

Para outras línguas
Για τις άλλες λώσσες
För andra språk
For andre språk

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INTENDED USE

Trinity Biotech Uni-Gold™ Cryptosporidium is a single use rapid immunoassay for the qualitative detection of C*ryptosporidium parvum (C. parvum)* antigens in human stool specimens. This test is intended for use with patients with gastrointestinal symptoms as an aid in the diagnosis of suspected *Cryptosporidium* gastrointestinal infections. As with other *Cryptosporidium* tests, results should be considered in conjunction with the clinical evaluation and medical history. For *In-Vitro* Diagnostic use.

SUMMARY AND EXPLANATION

Cryptosporidiosis is one of the most common waterborne diseases. The main symptom in immunocompetent individuals is a self-limiting short term watery diarrhea with symptoms lasting for on average one week and is treated mainly symptomatically[1,2]. The very young, old and the immunocompromised patients may develop more severe cryptosporidiosis[1,2].

The causative agent of the diarrheal illness, *C. parvum*, is a protozoan parasite that infects the intestine of humans and animals (mainly cattle, sheep and goats). Infection occurs by the fecal-oral route via water, soil or food that has been contaminated with feces of an infected individual or animal. After ingestion, *C. parvum* undergoes a complicated life cycle including asexual and sexual stages finally leading to 2 different types of oocysts. The thin walled oocysts reinfect the host; the mature thick walled oocysts are excreted in the stool. Infected humans shed most oocysts during the first week of infection[3] but shedding will continue for weeks after the end of the diarrhea[4]. Oocysts are highly infective; 2-10 oocysts are sufficient to cause an infection[5]. They can survive in the environment for months. The parasite is found throughout the world.

PRINCIPLE OF THE TEST

Trinity Biotech Uni-Gold™ *Cryptosporidium* was designed as a rapid lateral flow immunoassay to detect the presence of *C. parvum* antigen in fresh, preserved and media containing human stool specimens.

On the Uni-Gold™ Cryptosporidium, mouse anti-*C. parvum* antibody is coated onto the test line region of the nitrocellulose zone of the test strip. Goat anti-mouse IgG is coated onto the control line region. Mouse anti-*C. parvum* antibodies are also conjugated to red latex particles and dried onto inert glass fiber. This is inserted into the test strip below the nitrocellulose zone.

Cryptosporidium antigens present in the sample combine with the anti-*C. parvum* antibody/red latex. As this complex migrates it binds to the antibodies in the test region forming a visible pink/red band.

Excess conjugate forms a second pink/red band in the control region of the device. The control line should always appear as a visible pink/red band in the control region of the device to indicate that the test device is functioning correctly.

REAGENTS

MATERIALS SUPPLIED

- 1206620-D Test Devices: 20 devices, each containing a membrane striped with mouse anti-*C. parvum* IgG and goat anti-mouse IgG, and pads with dried red latex conjugated to anti-Cryptosporidium antibodies and mouse IgG antibodies.
- 1206620-B Cryptosporidium Dilution Buffer: 4.0ml of buffered solution containing surfactants and preservatives.
- 90-1750 Disposable transfer pipettes: 20 disposable single use pipettes, used to add sample to test tube and transfer the sample/dilution buffer mix to the test device.
- 90-1751 Test tubes: 20 dilution tubes used for preparation of the sample/dilution buffer mix.
- Test tube holder: Cardboard tube holder for holding up to 5 test tubes
- Package insert

MATERIALS REQUIRED BUT NOT SUPPLIED

- Stool specimen collection container
- Sealable tube for sample pre-dilution
- Deionized water
- Timer or stopwatch
- Biohazard disposal container
- Disposable gloves
- Uni-Gold™ Cryptosporidium positive and negative controls (1206621)

OPTIONAL MATERIALS NOT PROVIDED:

- Specimen transport media

STORAGE AND STABILITY

- Store all components at 2-30°C.
- Do not freeze or overheat.
- This product should not be used beyond the expiration date printed on the outer package label.
- The test kits should be kept away from direct sunlight, moisture and heat.

WARNINGS AND PRECAUTIONS

- For *In Vitro* Diagnostic use only
- For professional use only
- Directions should be read and followed carefully.
- Test Devices are for single use only. Do not reuse.
- Reagents are provided at the necessary working strength. Do not dilute reagents.
- Do not interchange reagents between kits with different lot numbers.
- Do not use kits or reagents beyond the stated expiration dates.
- Microbial contamination of reagents may decrease the accuracy of the assay.
- Treat all materials as if they were infectious and dispose of all material in accordance with local regulation. Liquid waste should be disposed of in a 1% sodium hypochlorite solution or in accordance with local requirements for disposal of infectious material.
- Dilution buffer solution contains <1% sodium azide. Sodium azide is toxic if ingested and forms potentially explosive copper and lead azide compounds in waste plumbing lines. Should the reagents come in contact with copper or lead waste plumbing, flush the waste line with large quantities of water to prevent the formation of potentially explosive compounds.
- Do not concentrate specimens before testing.
- Stool specimens preserved in PVA fixatives are not suitable for use.
- Do not freeze fixed samples.

The safety data sheet is available upon request.

Some components of this kit contain < 0.1% sodium azide.
EUH031: Contact with acid liberates toxic gas.
H302: Harmful if swallowed.
H317: May cause an allergic skin reaction.
H335: May cause respiratory irritation.
P264: Wash thoroughly with plenty of soap and water after handling.
P270: Do not eat, drink or smoke when using this product.
P280: Wear protective gloves / protective clothing / eye protection / face protection.
P301+P312: IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P330: If swallowed, rinse mouth.
P333 + P313: If skin irritation or rash occurs: Get medical advice/ attention.
P501: Dispose of contents and container in accordance to local, regional, national and international regulations.

SPECIMEN COLLECTIONS AND TRANSPORT

Specimens collected for routine ova and parasite examination can be used with Trinity Biotech Uni-Gold™ Cryptosporidium. Stool specimens should be collected in clean, leak-proof plastic containers.

- Fresh, untreated stool specimen should be stored at 2-8°C and tested within 48 hours of collection
- If fresh untreated stool specimen will not be tested within 48 hours of collection, the sample should be stored at -20°C or lower and tested within 2 months of collection. Avoid multiple freeze-thaw cycles.
- Stool specimens treated with 10% formalin or SAF (Sodium Acetate Formalin) fixatives may be refrigerated or stored at room temperate (between 2-30°C) but should be tested within 2 months of collection.
- Stool specimens collected in Cary-Blair or C&S Transport Medium (or equivalent) should be refrigerated (2-8°C) and tested within 1 week of collection or should be stored at -20°C or lower and tested within 2 months of collection. Avoid multiple freeze-thaw cycles.
- Stool specimens that have been concentrated or treated with PVA fixatives are not suitable for use with this test.

QUALITY CONTROL

Good Laboratory Practice (GLP) necessitates the use of control specimens to ensure proper device performance at least once daily. Uni-Gold™ Cryptosporidium Controls (product code: 1206621) are available separately for use only with Uni-Gold™ Cryptosporidium. These controls are used to verify correct device performance, operator procedure and result interpretation. The positive control will produce a reactive test result and the negative control will produce a non-reactive test result (refer to the test results and interpretation section).

It is recommended that positive and negative controls are run

- By all new operators performing testing on patient specimens,
- With each new kit lot and whenever a new shipment of test kits is received.
- At periodic intervals as specified in the laboratory Quality Assurance program.

Uni-Gold™ Cryptosporidium Controls must give the expected reactive or non-reactive results; otherwise the test results are not valid and must be repeated. Refer to the Uni-Gold™ Cryptosporidium Controls package insert (1206621-29EN) for instructions on the use of these reagents. It is the responsibility of each laboratory using Uni-Gold™ Cryptosporidium to establish an adequate quality assurance program to ensure the performance of the device under its specific locations and conditions of use. Contact Trinity Biotech should unexpected results occur.

Each Uni-Gold™ Cryptosporidium device has a built in procedural control that demonstrates assay validity. When a red/pink line appears at the control line position this indicates the device has been performed correctly. The control line will appear on all valid tests, whether the sample is reactive or non-reactive (refer to the test results and interpretation sections).

LIMITATIONS

1. Uni-Gold™ Cryptosporidium must be used in accordance with the instructions in this package insert to obtain an accurate result.
2. A negative test result does not exclude the possibility of the presence of *Cryptosporidium*. This may occur when the antigen level in the sample is below the detection level of the test. Correlation between the amount of antigen in a sample and clinical presentation has not been established.
3. Uni-Gold™ Cryptosporidium detects *C. parvum* antigen in stool samples. The test cannot be used to derive a relationship between the intensity of the specific visible bands and the occurrence or severity of clinical symptoms.
4. The results obtained are intended to aid in diagnosis only. All *in vitro* diagnostics tests must always be interpreted by the clinician in combination with the clinical evaluation, medical history, and/or other laboratory results to properly diagnose patients.
5. Use the liquid fraction of a specimen only; avoid any large pieces of insoluble debris. Excess particulates may cause the sample well to clog.
6. Reactivity to species of *Cryptosporidium* other than *C. parvum* has not been established.
7. Reading test results before or after the 15 minute read time may give incorrect results.
8. Proper specimen collection and processing are essential to achieving optimal performance of the assay.
9. Stool specimens that have been concentrated or treated with PVA fixatives are not suitable for use with this test.
10. Specimen stability has not been established at the lowest clinically relevant levels of *Cryptosporidium* oocysts.
11. Cross-reactivity to *E. dispar* has not been evaluated.

TEST PROCEDURE

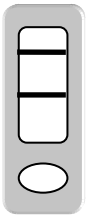
1. Ensure the Cryptosporidium Dilution Buffer is at room temperature (15-30^{0}C). Mix gently before use.
2. Sample preparation
   - Dilute fresh (unpreserved) stool samples 1:4 with deionized water (e.g. 0.1 g sample and 0.3 ml deionized water) before testing.
   - Specimens diluted in Formalin, SAF, Cary-Blair or C&S transport media or equivalent are used without further dilution.
   - Ensure all stool specimens are at room temperature (15-30^{0}C) prior to testing.
3. Fold test tube holder according to pictorial instructions printed on the cardboard.
4. Remove the required number of devices from their individual foil pouches and lay on a clean, flat surface.
5. Label each device with appropriate patient information.
6. Label test tubes and place in rack.
7. Hold the dropper bottle vertically; add 4 drops of Cryptosporidium Dilution Buffer to each tube.
8. Use a disposable transfer pipette to transfer sample (see sample preparation above). Hold the pipette vertically and add 2 drops of the stool specimen into the correspondingly labeled test tube.
   Note: Use the liquid fraction of a specimen only; avoid any large pieces of insoluble debris. Excess particulates may cause the well to clog.
9. Expel any remaining sample in the pipette into a bio-hazard waste container.
10. Gently mix the test tube then use the same pipette to withdraw all of the buffered-sample from the test tube.
11. Hold the pipette vertically over the device sample port; carefully add the buffered-sample drop-wise. Time the assay from this point.
12. Read assay results immediately at the end of the 15 minute incubation. Do not read results after 15 minutes as they may be inaccurate.

INTERPRETATION OF RESULTS

- **Positive Result:**

  Two pink/red lines of any intensity appear in the device window; at the test line and control line positions. This indicates a reactive result that is interpreted as positive for *Cryptosporidium* antigen.

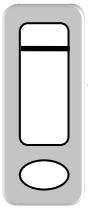
Positive Image



- **Negative Result:**

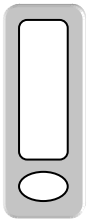
  A single pink/red line of any intensity appears in the device window at the control line position. There is no line at the test line position. This indicates a non-reactive result that is interpreted as negative for *Cryptosporidium* antigen.

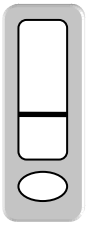
Negative Image



- **Invalid Result:**

  No line appears in the device window at the control line position. This is an invalid result and cannot be interpreted. This is irrespective of whether or not a pink/red line appears in the device window at the test line position. If either condition below occurs, the test should be repeated with a new device.





PERFORMANCE CHARACTERISTICS

The performance of Uni-Gold™ Cryptosporidium was evaluated on 562 retrospective stool samples at three geographically diverse clinical laboratories, and on 378 prospective stool samples at a fourth external laboratory.

Clinical Sensitivity& Specificity

Retrospective Study
The sensitivity and specificity of the test was compared against DFA microscopy with retrospective samples at sites 1 and 2 as shown in the following table.

Cryptosporidium			DFA Microscopy	
			+	-
Site 1	Uni-Gold	+	28	0
		-	0	103
Site 2	Uni-Gold	+	49	0
		-	0	54
	Total	+	77	0
		-	0	157

Sensitivity: 100% (77/77) 95% CI 94 - 100%
Specificity: 100% (157/157) 95% CI 97 - 100%

The positive samples were tested in the following stool matrix types: formalin (47), SAF (11), unpreserved frozen (14), Cary Blair (2), and C&S (3). The negative samples were tested in the following stool matrix types: formalin (71), SAF (49), unpreserved frozen (23), Cary Blair (2), C&S (12).

Additional retrospective studies
Performance of the test was compared to non-fluorescent microscopy (staining) at two external laboratories.

At site 2, 47 retrospective samples were evaluated and demonstrated a Positive Percent Agreement (PPA) of 100% (26/26) and a Negative Percent Agreement (NPA) of 100% (21/21) versus Modified Acid-Fast Stain.

At site 3, 281 retrospective SAF (Sodium Acetate Formalin) samples were evaluated and demonstrated a PPA of 92% (55/60) and a NPA of 90% (198/221) versus Modified Kinyoun Stain. Of the 23 negative samples (by Modified Kinyoun Stain) that tested positive on the Uni-Gold™ Cryptosporidium test, three of these samples subsequently tested positive for *Cryptosporidium* by DFA microscopy in agreement with the Uni-Gold™ Cryptosporidium result.

Prospective Study
The following table shows a summary of test performance compared against DFA microscopy with prospective samples at site 4.

Cryptosporidium			DFA Microscopy	
			+	-
Site 4	Uni-Gold	+	0	0
		-	0	378

Specificity: 100% (378/378) 95% CI 99 – 100%

Due to infection prevalence, no positive samples were encountered during this prospective study. Samples were tested in the following sample matrix types: unpreserved fresh (153), unpreserved frozen (45), formalin (45), SAF (45), C&S (45), and Cary Blair (45).

Concordance Study
Uni-Gold™ Cryptosporidium was compared to a commercially available lateral flow test on 299 retrospective stool samples in the following stool matrix types: unpreserved frozen (37), Cary Blair (4), SAF (159), and formalin (99). The percent agreement of Uni-Gold™ Cryptosporidium versus the comparator device was as follows:

Cryptosporidium			Comparator Device		% Agreement
			+	-	
Site 1	Uni-Gold	+	24	1	100% Pos Agr
		-	0	52	98.1% Neg Agr

Cryptosporidium			Comparator Device		% Agreement
			+	-	
Site 2	Uni-Gold	+	56	0	100% Pos Agr
		-	0	55	100% Neg Agr

Cryptosporidium			Comparator Device		% Agreement
			+	-	
Site 3	Uni-Gold	+	27	51*	96.4% Pos Agr
		-	1**	32	38.6% Neg Agr

*At Site 3, out of 51 samples that tested positive on Uni-Gold™ Cryptosporidium and negative on the comparator device, 30 samples were positive by Modified Kinyoun Stain light microscopy and three samples were positive for *Cryptosporidium* by DFA microscopy in agreement with the Uni-Gold™ Cryptoporidium result.
**The one sample that tested negative on Uni-Gold™ Cryptosporidium and positive on the comparator device was negative by Modified Kinyoun Stain microscopy in agreement with the Uni-Gold™ Cryptoporidium result.

Expected Values
The performance of the Uni-Gold Cryptosporidium™ Test Kit was evaluated at four external laboratories. Samples were collected from Hospitals throughout the US and Canada and consisted of both male and female patients, of all ages from pediatric to adult, who presented with gastrointestinal symptoms. The retrospective study included 163 positive samples and 399 negative samples confirmed by microscopy. The prospective study included 378 samples which were subsequently confirmed negative by microscopy. There were no differences observed in clinical performance between males or females, or between pediatric or adult populations.

Analytical Sensitivity
The limit of detection was determined by spiking purified *Cryptosporidium* oocysts quantified by DFA microscopy into negative human stool samples. The samples were serially diluted and three replicates from each dilution were tested with the Uni-Gold Cryptosporidium to determine the concentration that produced a positive result 95% of the time. A limit of detection concentration of 9920 oocysts/mL was confirmed by testing an additional 20 replicates with the Uni-Gold Cryptosporidium.

Cross Reactivity.
No cross-reactivity was observed with samples containing the following organisms:

Adenovirus serotype 3	*Coronavirus OC43*	*Iodamoeba butschlii*
Adenovirus serotype 5	*Coxsackievirus*	*Isospora sp.*
Adenovirus serotype 7	*Cyclspora cayetanensis*	*Klebsiella pneumoniae*
Adenovirus serotype 41	*Cytomegalovirus (CMV)*	*Microsporidia*
Adenovirus serotype 40	*Dientamoeba fragilis*	*Salmonella typhimurium*
Aeromonas hydrophila	*Diphyllobothrium latum*	*Shigella dysenteriae*
Ascaris lumbricoides	*Echovirus 20*	*Shigella flexneri*
Bacteroides fragilis	*Endolimax nana*	*Shigella sonnei*
Bacillus cereus	*Entamoeba coli*	*Staphylococcus aureus*
Bacillus subtilis	*Entamoeba hartmanni*	*S. aureus (Cowan's)*
Blastocystis hominis	*Entamoeba histolytica*	*Staphylococcus epidermidis*
Campylobacter coli	*Enterobius vermincularis*	*Strongyloides stercoralis*
Campylobacter fetus	*Enterococcus faecalis*	*Taenia sp.*
Campylobacter jejuni	*Escherichia coli*	*Trichurius trichiura*
Candida albicans	*Escherichia coli 0157H7*	*Vibrio parahaemolyticus*
Chilomastix mesnili	*Giardia lamblia*	*Yersinia enterocolitica*
Clostridium difficile	*Hookworm*	
C. biffermentans	*Hymenolepis nana*	

Cross-reactivity to *E. dispar* has not been evaluated.

Interfering Substances
The analytical specificity of the test was determined in stool samples containing potentially interfering substances at clinically relevant concentrations. Compounds were respectively spiked into positive and negative samples at medically relevant dosages (treatment). All treatments, including the unspiked (neat) positive and unspiked (neat) negative samples were tested in duplicate with Uni-Gold™ Cryptosporidium. The following compounds were tested: Human blood (20% v/v), Mucin (3.5% w/v), Stool fat (Triglycerides 0.14mg/ml or Stearic Acid 20% v/v), Pepto-Bismol (Bismuth) (20% v/v), Imodium A-D (Loperamide HCl) (20% v/v), Kaopectate (Attapugite) (20% v/v), Vancomycin (0.6mg/ml), K-Y jelly (0.289mg/ml), Vasoline (0.22mg/ml), Condom lubricant (1.716mg/ml), Maalox (magnesium hydroxide, calcium carbonate) (20% v/v), Tagamet (Cimetidine) ($2.0x10^{-2}$ mg/ml), Pepsid (Famotidine) ($6.0x10^{-4}$ mg/ml), Zantac (Ranitidine) ($6.0x10^{-3}$ mg/ml), Prilosec (Omeprazole) ($6.0x10^{-3}$ mg/ml), Nitrazoxanide ($6.96x10^{-3}$ mg/ml), Atovaquone (0.031mg/ml), Azithromycin ($1.2x10^{-2}$ mg/ml), Metronidazole (0.12mg/ml), Paromomycin (0.42mg/ml), Trimethoprim-sulfamethoxazole (TRM 0.04mg/ml & Sulf 0.4mg/ml). No test interference was observed by any of the compounds at the concentrations tested.

Reproducibility Study
Reproducibility testing was carried out on twelve blinded samples (varying positive samples and negative samples) by two operators, twice daily at each of three sites for five days (60 replicates). 100% of the samples tested for *Cryptosporidium* produced the expected results.

REFERENCES

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2. Guerrant RL. "Cryptosporidiosis: an emerging, highly infectious threat. "Emerg Infect Dis 1997;3:51-7.
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ORDERING INFORMATION

Cat. No.	Item	Quantity
1206620	Uni-Gold™ Cryptosporidium	20 devices
1206621	Uni-Gold™ Cryptosporidium Control Kit	1 positive & 1 negative

GUIDE TO SYMBOLS

	Consult Instructions for Use
REF	Product Number
LOT	Lot Number
IVD	*In Vitro* Diagnostic Medical
	Use By
	Caution, consult accompanying documents
	Temperature limitation
	Manufacturer
 or 	WARNING

EC REP Trinity Biotech plc.
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