Technical Briefing: TECHLAB®

Diagnosis of common faecal parasites

The need for accurate detection of gastrointestinal parasites

Gastrointestinal diseases can cause great discomfort and distress to a patient.

Rapid, accurate diagnosis of gastrointestinal disease is central to a patient receiving appropriate treatment and symptomatic relief in a timely manner and is necessary to inform public health actions.

TECHLAB® offer a range of high-quality diagnostic kits for the detection of three common intestinal parasites. *Cryptosporidium* spp. (cryptogregaria), *Giardia* spp. (flagellated protozoa) and *Entamoeba histolytica* (amoeba) have a worldwide distribution[1] and are causative agents of notifiable infectious diseases.[2]

TECHLAB® offer a range of kits for rapid laboratory detection of these three common intestinal parasites from fresh or frozen faecal samples (unpreserved) and faecal samples in suitable transport media (Cary Blair, C&S).

Product	Format	Product Code	Detects	Time to result
TRI-COMBO PARASITE SCREEN	96 well plate	T30408	*Giardia* *Cryptosporidium* *E. histolytica*	2 hours
GIARDIA/CRYPTOSPORIDIUM CHEK™	96 well plate	30401	*Giardia* *Cryptosporidium*	2 hours
GIARDIA/CRYPTOSPORIDIUM QUIK CHEK™	Rapid EIA	T30407	*Giardia* *Cryptosporidium*	30 mins
GIARDIA II™	96 well plate	PT5012	*Giardia*	2 hours
CRYPTOSPORIDIUM II™	96 well plate	30406	*Cryptosporidium*	2 hours
E. HISTOLYTICA QUIK CHEK™	Rapid EIA	T30409	*E. histolytica*	30 mins
E. HISTOLYTICA II™	96 well plate	T5017	*E. histolytica*	2.5 hours

Description and Key Benefits

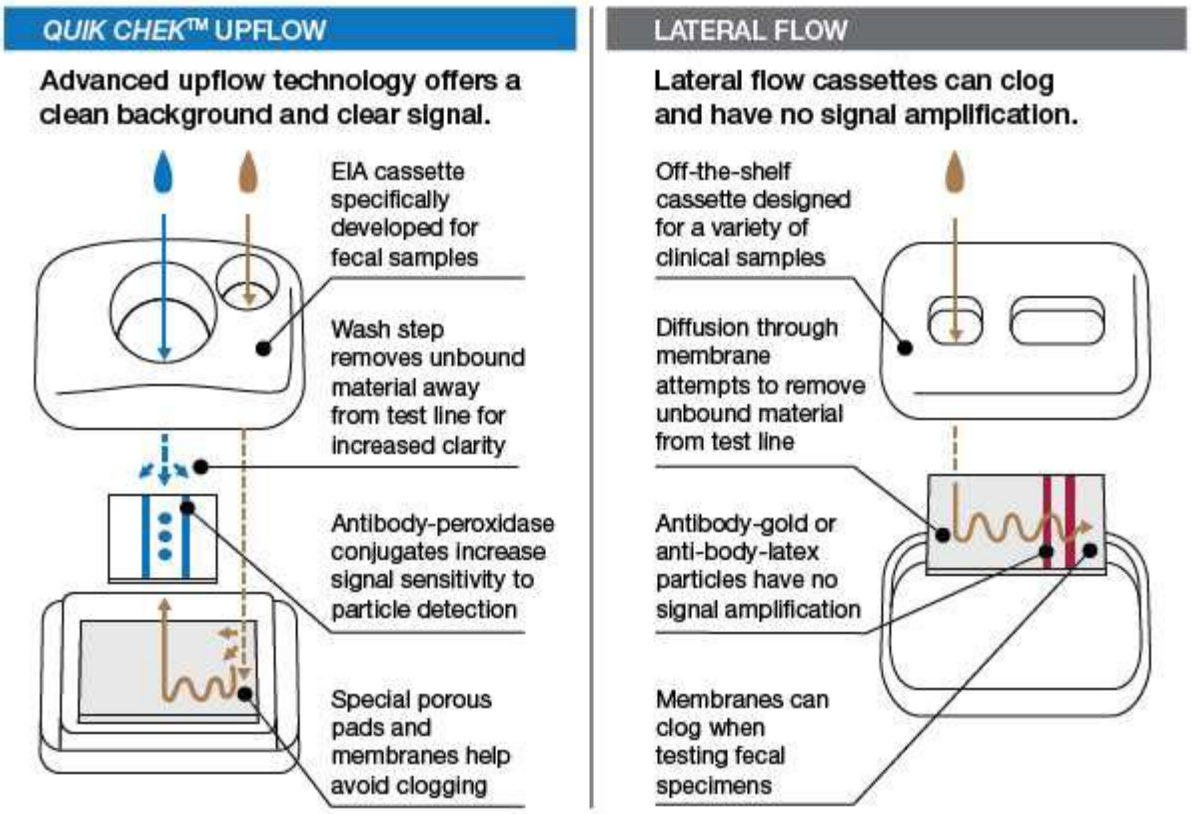
The TECHLAB® range of kits largely comprise two formats:

CHEK™	QUIK CHEK™
96-well plate-based enzyme immunoassay (EIA)	Single test membrane EIA technology in a cassette
▪ ELISA-based, 96-well plate format ▪ Suitable for screening large numbers of samples ▪ Results within 2 hours ▪ Simple procedure ▪ Automatable ▪ Highly standardised	▪ Direct faecal specimen testing in a rapid assay format ▪ Individual device ▪ Membrane bound EIA technology ▪ Suitable for smaller numbers of samples or for 'out-of-workflow' testing ▪ Results within 30 minutes ▪ Easy to interpret ▪ No equipment needed ▪ Highly specific and sensitive

TRI-COMBO PARASITE SCREEN

GIARDIA/CRYPTOSPORIDIUM QUIK CHEK™

How TECHLAB® QUIK CHEK™ kits differ from lateral flow assays



QUIK CHEK™ kits

- Membrane enzyme immunoassay (EIA)
- Additional steps (wash/conjugate steps):
  - The wash step makes it easier to see the results
  - The conjugate step serves to amplify particle detection
- Superior sensitivity
- Results within 30 minutes

Watch this video on YouTube to find out more: https://www.youtube.com/watch?v=Hhywc7HJ-7g

Product information – multiple parasite detection

TRI-COMBO PARASITE SCREEN (Product code: T30408)

The *TRI-COMBO PARASITE SCREEN* is a 96-well plated based EIA for the simultaneous qualitative detection of *Cryptosporidium* spp., *Giardia* spp., and/or *E. histolytica* antigen in human faecal specimens using monoclonal and polyclonal antibodies to cell-surface antigens of the three parasites.

The *TRI-COMBO PARASITE SCREEN* serves as a rapid method to rule out negative specimens and reduce the number of specimens that require additional follow-up testing.

Any positive result on the *TRI-COMBO PARASITE SCREEN* requires a follow up test to determine the pathogen present in the sample. The TECHLAB® GIARDIA/CRYPTOSPORIDIUM QUIK CHEK™ and E. HISTOLYTICA QUIK CHEK™ kits are ideal for this purpose.

- Ideal screening test for the three most common parasitic causes of diarrhoea
- ELISA format
- Results in 2 hours
- Simple procedure
- Highly standardised

GIARDIA/CRYPTOSPORIDIUM CHEK™ (Product code: 30401)

The *GIARDIA/CRYPTOSPORIDIUM CHEK*® test is an enzyme immunoassay for the qualitative detection of *Giardia* cyst and *Cryptosporidium* oocyst antigen in human faecal specimens.

It is indicated for use as an aid in the diagnosis of patients with diarrhoea suspected of *Giardia* and/or *Cryptosporidium* gastrointestinal infections.

- Ideal screening test
- ELISA format
- Results in <2 hours
- Simple procedure
- Highly standardised

GIARDIA/CRYPTOSPORIDIUM QUIK CHEK™ (Product code: T30407)

The *GIARDIA/CRYPTOSPORIDIUM QUIK CHEK*™ test is a rapid membrane enzyme immunoassay for the simultaneous qualitative detection and differentiation of *Giardia* cyst antigen and *Cryptosporidium* oocyst antigen in a single test device.

- Individual test device
- Direct faecal specimen testing in a rapid assay format
- Membrane EIA technology
- Differentiates *Giardia* and *Cryptosporidium*
- Results in 30 minutes
- Easy to interpret
- No equipment needed
- Highly specific and sensitive

Product information – single parasite detection

CRYPTOSPORIDIUM II™ (Product code: 30406)

The *CRYPTOSPORIDIUM II*™ test is a second-generation monoclonal antibody-based ELISA for the rapid detection of *Cryptosporidium* oocyst antigen in faecal specimens.

- ELISA format
- Specific for *Cryptosporidium* oocyst antigen
- High correlation with IFA-confirmed microscopy
- Results in 2 hours
- Simple procedure
- Highly standardised

GIARDIA II™ (Product code: PT5012)

The *GIARDIA II*™ test is a second-generation monoclonal antibody-based ELISA for the rapid detection of *Giardia lamblia* cyst antigen in faecal specimens.

- ELISA format
- Specific for *Giardia lamblia*
- High correlation with IFA-confirmed microscopy
- Results in 2 hours
- Simple procedure
- Highly standardised

E. HISTOLYTICA II™ (Product code: T5017)

The *E. HISTOLYTICA II*™ test is a second-generation monoclonal antibody-based ELISA for the rapid detection of *Entamoeba histolytica* adhesin in faecal specimens.

- Detects pathogenic *E. histolytica* and does not cross react with non-pathogenic *E. dispar*
- ELISA format
- Results in 2.5 hours
- Simple procedure
- Highly standardised

E. HISTOLYTICA QUIK CHEK™ (Product code: T30409)

The *E. HISTOLYTICA QUIK CHEK*™ test is a rapid membrane enzyme immunoassay for the qualitative detection of adhesin from *Entamoeba histolytica* in a single use cassette.

- Detects pathogenic *E. histolytica* and does not cross react with non-pathogenic *E. dispar*
- Individual test device
- Direct faecal specimen testing in a rapid assay format
- Highly sensitive membrane EIA technology
- Results within 30 minutes
- Simple to complete
- Easy to interpret

- No equipment needed

Supporting evidence

In the UK, it is likely that rates of *Cryptosporidium* spp., *Giardia* spp., and *E. histolytica* are underreported. Results from two prospective, population-based studies of infectious intestinal disease observed very low rates of detection of *Cryptosporidium parvum* detected from community samples (3/782, 0.4%) and from patients presenting to their GP with diarrheal illness (12/874, 1.4%).[3] Similarly, rates of *Giardia intestinalis* detected from community samples (6/782, 0.8%) and patients presenting to the GP (9/874, 1%) were also low.[3] Detection of *E. histolytica* was not included in these studies.

Introduction of a faecal antigen detection assay improved detection of *Giardia* three-fold in two different geographical areas compared with conventional detection methods.[4,5] PHE reported higher rates of *Giardia* in 2017 (8.2 per 100,000) compared with previous years, which was thought to be due to improved detection using molecular or antigen methods for *Giardia.*[6]

Listed below is a selection of peer-reviewed published work about the clinical performance of the TECHLAB® kits for diagnosis of the presence of gastrointestinal parasites in stool samples (hyperlinked to abstract or freely available version):

- Multisite Performance Evaluation of an Enzyme-Linked Immunosorbent Assay for Detection of *Giardia*, *Cryptosporidium*, and *Entamoeba histolytica* Antigens in Human Stool (Christy *et al.*, 2012)
- The rapid detection of *Cryptosporidium* and *Giardia* species in clinical stools using the QUIK CHEK immunoassay (Alexander *et al*., 2013)
- Evaluation of a screening test for detection of giardia and cryptosporidium parasites (Youn *et al.*, 2009)

Pricing and ordering

Product Code	Item Name	Item Rate	Item Units
T30408	*TRI-COMBO PARASITE SCREEN*		1 box of 96
T30407	*GIARDIA/CRYPTOSPORIDIUM QUIK CHEK™*		1 box of 25
T30409	*E. HISTOLYTICA QUIK CHEK™*		1 box of 25
30401	*GIARDIA/CRYPTOSPORIDIUM CHEK™*		1 box of 96
T5017	*E. HISTOLYTICA II™*		1 box of 96
PT5012	*GIARDIA II™*		1 box of 96
30406	*CRYPTOSPORIDIUM II™*		1 box of 96

For all order enquiries, please email enquires@unahealth.co.uk

References

1. PHE. *UK Standards for Microbiology Investigations Investigation of specimens other than blood for parasites-standards-for-microbiology-investigations-smi-quality-and-consistency-in-clinical-laboratories PHE publications gateway number: 2016309 UK Standards for*. 2017.

2. Anon. The Health Protection (Notification) Regulations 2010. Available at: https://www.legislation.gov.uk/uksi/2010/659/schedule/2/made. Accessed April 23, 2021.

3. Tam CC, O'Brien SJ, Tompkins DS, *et al.* Changes in causes of acute gastroenteritis in the United Kingdom over 15 years: Microbiologic findings from 2 prospective, population-based studies of infectious intestinal disease. *Clin Infect Dis* 2012; **54**: 1275–86.

4. Ellam H, Verlander NQ, Lamden K, Cheesbrough JS, Durband CA, James S. Surveillance of giardiasis in Northwest England 1996-2006: impact of an enzyme immunoassay test. *Euro Surveill* 2008; **13**: 9–13. Available at: http://dx.doi.org/10.2807/ese.13.37.18977-en.

5. Ferguson LC, Smith-Palmer A, Alexander CL. An update on the incidence of human giardiasis in Scotland, 2011-2018. *Parasites and Vectors* 2020; **13**: 1–7. Available at: https://doi.org/10.1186/s13071-020-04160-9.

6. Anon. Giardia data 2008 to 2017 - GOV.UK. Available at: https://www.gov.uk/government/publications/giardia-national-laboratory-data/giardia-data-2008-to-2017. Accessed April 23, 2021.