

## How to Choose an Appropriate Stool Test

By Ute Allison ND, MSc Biol., BSc Sp. Sc., BNA, MRN, VDH

### Why Use Stool Testing in Complementary Medicine?

Finding the cause of a health problem is a difficult task. Often very different conditions show identical or similar symptoms, causing time and money to be wasted on inappropriate therapies. This not only disadvantages the client, but also impacts on a practitioner's reputation. Stool testing can help eliminate the guesswork of diagnosis and improve therapy results through the naturopathic principle of treating the underlying cause of a problem.

### The Advantages of Testing Stool

- **Stool testing is a method with proven success in determining a number of parameters** relating to digestive and immune health.
- **The sample is easy to obtain** in the patient's own home without the need for specialist equipment, nurses or needles. (1)
- **The underlying cause(s) of a health problem can be found**, aiding diagnosis and therapy success in difficult cases.
- **Tests results can improve compliance** as some clients are more motivated to complete a therapy program if they see an objective result
- **Stool testing is cost effective** compared to many other forms of testing, with the added advantage of selecting as many or as few parameters as needed to meet therapeutic aims.
- **Therapy success can be quantitatively measured**, eliminating the need for excess treatment and providing peace of mind to the client and practitioner.

### The Gastrointestinal Tract

To understand the great value of stool as a test material it is important to understand how the digestive system works. The gastrointestinal tract is simply a tube, which starts at the mouth, passes through the body and opens again at the anus. Since the tube opens to the outside world at either end, the contents are considered non-systemic. However, this tube has to perform vital and totally contradictory tasks: It has to absorb even traces of substances from its lumen into the body, which then become systemic, but at the same time fulfil a role as a perfect barrier, protecting our system from all unwanted molecules. (2) In addition, the intestines also provide a route for certain digestive and waste substances secreted by the body, as well as being home to the gut associated lymphatic tissue (GALT), the intestinal immune system that constitutes 70-80% of an adult's specific immunity. (1, 3) This is reflected in the well-known German saying: "Death lives in the intestines"!

The role of the gastrointestinal tract in health has been recognised for some time now. As early as 1908 the Russian Nobel prize winner, Ilya Ilyich Mechnikov, published a book entitled "The Prolongation of Life". In the book he discussed the possibility of prolonging life by supplementing beneficial lactobacilli to counteract the pathogenic influence of putrefactive bacteria(3). This belief is now widely held. Scientific publications on the micro-flora have increased enormously. In 1990 a search for "probiotics" found only 6 publications. Now, in 2009, the same search performed on Pub Med returns in excess of 5000 papers. Consequently, science is now starting to make clear correlations between health problems and changes in the micro-ecology, especially in cases of allergies and other conditions involving the immune system.

### What Can be Tested Using Stool Samples?

As in conventional medicine it is possible to test for pathogenic bacteria, viruses and parasites in case of diarrhoea symptoms or check for digestive enzymes in case of dyspepsia or other digestive problems. Service offered to complementary therapists also include analysis of: physiological micro flora, fungal

overgrowth, immune parameters, inflammation markers and many other parameters. This increases the number of indications for stool tests from those disorders that are obviously located in the GI system, to numerous other health problems that are not primarily connected to the gut.

## **Popular Stool Tests**

### Mycology – Candida Test

One of the best-known stool tests, (apart from the one for occult blood which is often performed by GPs) is probably the mycology analysis or “candida test”.

This stool test will analyse a fungal colonisation including all candida species and other yeasts or moulds in the intestinal lumen. It cannot however, determine whether there is a systemic candidiasis present. Systemic fungal infections are fortunately rare and usually limited to immune compromised patients. A test for a systemic fungal infection would require blood.

When testing for fungal overgrowth it is advisable to use a service that carries out a concomitant mouth swab in case fungi are missed in the stool and to determine if the mouth might be the cause of the fungal problem.

Fungi are part of the normal intestinal flora, but if the host’s micro-ecology is out of balance, they can change into a more invasive form, multiply and change their metabolism. In order to do this they produce proteases, which enable them to adhere to the intestinal mucosa and grow into high numbers. Using a stool test that also measure secreted aspartic proteases is vital in determining whether a Candida overgrowth is pathogenic.

### Why Test for Candida, Yeasts and Moulds?

- Fungal overgrowth can cause the micro-flora balance to become upset as these fungi compete for the ecological niche with our beneficial bacteria. (5)
- Enzymes that enable fungi to adhere to the gut wall cause inflammation and irritation.
- A balanced flora is key for modulating the immune response via the M-cells in the Peyer’s Patches. When the micro-flora is disturbed allergies and other immunological problems can develop. One of the first symptoms experienced is often a cross reaction to baking yeast.
- Mould spores can cause severe immune problems. Detection of moulds in the intestines can prompt further investigations as to the source of moulds of a client’s environment.
- The client is presenting with symptoms such as bloating and flatulence, sugar cravings (from the fungi’s metabolism of sugar to CO<sub>2</sub>) and/or immune issues
- To rule out candida as the culprit as the above complaints can be caused by other problems

### More useful stool tests

#### Stool pH

The stool pH represents the conditions in the colon. If it is too acidic, it will indicate too much fermentation if it is too alkaline, it is a sign of putrefaction. This alone can give valuable hints to the cause of the problem. This parameter is usually offered as part of any stool test.

#### Complete status of intestinal colonisation

This test analyses 11 bacterial strains, which scientists consider as representative for the gut ecology. These bacteria are physiological in normal numbers, but cause problems if their counts are out of balance. (7) In this tests stool pH is also measured and a full fungal analysis for all yeasts and moulds, like in the mycology, is performed. With the increasing knowledge about the importance of the micro-flora, this test has become the most important basic test.

### Pathogenic stool bacteria

In cases of acute diarrhoea, pathogenic bacteria such as salmonella, shigella, campylobacter, EH E. coli, yersinia and clostridium difficile toxin A can be analysed in the stool.

### Intestinal parasites:

This test is a microscopic investigation for worm eggs and protozoa cysts. The analysis involves a complicated procedure of concentrating and filtering the stool, which is carried out by specialists. Due to the very hardy nature of worm eggs and protozoa cysts, worms which lay eggs into the intestine and protozoa which forms cysts can be detected in this way. The test can be useful in all cases of persistent diarrhoea or alternating diarrhoea and constipation, attacks of sweating or feeling cold, possibly with fever, colicky pains, hunger attacks which alternate with times of no appetite, persistent cough, weight loss, anal itching, anaemia and symptoms following foreign travel.

### Oxyures (Pinworms):

Pinworms do not present in normal stool parasite tests. However, a specimen taken from the anus using special sticky tape can be used for analysis if a pinworm infection is suspected.

### Inflammation markers

#### Secretory IgA:

This is a very useful marker, which measures the current functional status of the intestinal immune system (GALT). It can be a useful when immune system involvement is suspected.

#### PMN-elastase:

This is an enzyme released in granulocyte mediated inflammation from segmented leukocytes. It can be detected in the stool. Increased readings can indicate types of colitis of different origin, Crohn's disease, ulcerative colitis or some malignant intestinal tumours.

#### Alpha-1-Antitrypsine (Leaky gut):

This enzyme is synthesised in the liver and it is a non-specific protease inhibitor in the serum. With inflammation, however, or when intestinal lining has an increased permeability this enzyme can be found in the stool, as it is basically not broken down in the GI tract. This makes it a useful parameter to measure leaky gut and also indicate inflammation.

#### Pancreas elastase 1:

Like chymotrypsin this is a pancreas specific enzyme. Its detection in the stool measures functional problems of the pancreas, however, it is more sensitive than chymotrypsin and the readings are not influenced by enzyme substitution. This investigation is indicated in all cases of all relapsing upper abdominal disorders, belching, feeling full, bloating and fatty stools. It is also used as a marker for the early detection of mucoviscidosis. (1)

#### Anti-transglutaminase-sIgA:

This test can detect celiac disease by measuring specific intestinal sIgAs against the enzyme tissue-transglutaminase, a method which was only devised in 1997. In case of a positive result a biopsy and an additional blood test is recommended to verify the diagnosis. Unfortunately the patient has to consume gluten for at least one week prior to the test to provoke the antibodies. This test is indicated in all cases where celiac disease is suspected, which can cause different typical or sometimes non typical symptoms. (7)

#### Helicobacter pylori:

In this test the presence of the H. pylori bacterium can be detected with an antigen test from a single stool sample. The sensitivity of this test can be compared with the breath test. It has a sensitivity of about 94%. (8) This stool test can be used to diagnose an infection with H. pylori as well as the success of a treatment. It is useful in cases of chronic gastritis, symptoms of gastric ulcers and chronic stomach pains.

### Intestinal bleeding:

In this test the human specific haemoglobin-haptoglobin complex is analysed. This test does not show the false positive results of the normal occult blood test. It is part of the intestinal tumour screening and is recommended as a regular test from the age of 45. (1)

### M2-PK tumour marker:

This ELISA test detects specific antibodies to tumour M2-pyruvate kinase (M2-PK), an isomer that only tumour cells produce during their glucose metabolism. Antibody levels increase with the presence of any tumour, which is secreting this metabolic product into the intestines. For colo-rectal cancers this test has an 84 % sensitivity and an 80 % specificity, which, in conjunction with the intestinal bleeding, makes it a useful screening marker.(9) It is indicated as a regular screening investigation from the age of 45-50 or in cases of repeated rectal bleeding, or blood-stained stools, persistent change in bowel habits (for six weeks) to looser bowel motions and/or needing to go to the toilet more frequently or constipation or alternating loose movements and constipation, severe colicky abdominal pain or unexplained tiredness or weight loss. (7)

### Choosing a Test

When choosing a stool test the parameters ordered should be those that will make a difference to the therapeutic approach. Fortunately certain test combinations have proved to be useful for certain symptoms. The table below offer's a guide.

A selection of possible Symptoms	Stool test(s) to consider
Anal itching	Mycology, Test for pinworms
Atopic eczema	Mycology or complete status of intestinal colonisation, leaky gut, sIgA
Atopic problems (asthma, hayfever, rhinitis)	Mycology or complete status of intestinal colonisation, leaky gut, sIgA
Bad breath	Mycology with mouth swab, Helicobacter pylori
Blood in stool	Intestinal bleeding, M2-PK tumour marker
Cancer: suspicion of intestinal cancer	Tumour-M2-PK, intestinal bleeding
Candia symptoms	Mycology: Screening the stool for all yeasts and moulds, mouth swab and stool pH.
Candida symptoms: recurring	Mycology, sIgA, leaky gut
Candida: systemic	Blood test
Celiac disease, suspected	Anti-transglutaminsase-sIgA
Crohn's disease	Mycology or complete status of intestinal colonisation, PMN-elastase, leaky gut, Tumour-M2-PK, intestinal bleeding
Damp living conditions	Mycology
Diarrhoea, chronic	Pathogenic bacteria, mycology or complete status of intestinal colonisation, PMN-elastase, leaky gut, Tumour-M2-PK, intestinal bleeding
Food intolerance	Mycology or complete status of intestinal colonisation, leaky gut, sIgA
Gastritis	Helicobacter pylori, Tumour-M2-PK, intestinal bleeding
Hair: Changes of hair and scalp	Mycology or complete status of intestinal colonisation, leaky gut, sIgA
Heartburn	Helicobacter pylori, mycology
IBS	Mycology or complete status of intestinal colonisation, sIgA, leaky gut
Infections: frequently occurring	Mycology or complete status of intestinal colonisation, sIgA, leaky gut
Itching: general	Mycology, leaky gut
Leaky gut syndrome	Mycology, sIgA, leaky gut

Mouth: changed mucous tissue	Mycology with mouth swab
Pancreas problems	Pancreas elastase-1
Parasites	Intestinal parasites
Psoriasis	Mycology, Test for pinworms
Rash	Mycology, leaky gut, Helicobacter pylori
Respiratory tract problems, unclear cause	Mycology or complete status of intestinal colonisation and pathogenic bacteria of sputum
Skin: suspected fungal infection	Test for fungi of skin, hair or nails (special specimen required)
Tongue, burning	Mycology, Helicobacter pylori
Ulcerative colitis	PMN-elastase, leaky gut, sIgA, Tumour-M2-PK, intestinal bleeding, mycology
Vaginal itching/ Peri-vaginal itching	Test for pinworms. Vaginal itching for example in young girls may be caused by pinworms

### How to Start Testing?

For practitioners new to stool testing, some labs offer a discounted service for personal stool tests, which can be a useful way to become familiar with the testing procedure and presentation of results. Reputable laboratory services will also offer a full explanation of any results and a practitioner support service. In addition, some will provide result specific therapy plans that include diet, supplement and hygiene recommendations to aid the practitioner in devising an appropriate therapy.

The key to successful stool testing is simple:

1. Choose as many parameters as necessary, but as few as possible to help manage client finances
2. Uncover the underlying cause
3. Target the problem with a specific and effective treatment protocol

### References:

1. Gero Beckmann, Andreas Rueffer: Mikrooekologie des Darmes, Schluetersche, 2000
2. Dr.Rainer Smith-Fuchs: Grenzflaechen, Mikrobiologische Therapie in Wissenschaft und Praxis, AMT, 2004
3. J.Schulze, U. Sonnenborn, T. Oelschlaeger, W. Kruis: Probiotika, Thieme Verlag, 2008
4. J.Schulze, U. Sonnenborn, T. Oelschlaeger, W. Kruis: Probiotika, p 49, Thieme Verlag, 2008
5. Prof. Dr. S. Nolting: Mykosen des Verdauungstraktes, Medi Praxisreihe, 1994
6. U. von Bock: Der Darm-Bastion im Antigensturm, Forum Immunologie, 4/93
7. Labor Dres. Hauss: Benutzer Handbuch, 3<sup>rd</sup> Issue 2005, Own publication
8. Z. Gastroenterol 1999, 37, 1145-1149
9. Anticancer Research, 2003, 23, 851-854.

### Biography

Ute Allison originally studied a BSc in Sport Science and MSc in Biology in Germany before retraining as a Naturopath in 1992. Since then she has been in continuous practice as a therapist as well as lecturing for the College of Naturopathic Medicine and running Biological Testing Service (BTS)

BTS is the exclusive UK representative for the leading German microbiological laboratory run by Dr. Reinhard Hauss. The company provides a cost-effective, practitioner stool testing service with unparalleled levels of technical support.

Further information can be found at [www.candidatest.co.uk](http://www.candidatest.co.uk) or by calling 01903 893591

This article was published in

Advanced Nutrition for Professionals (Higher Nature), Issue October 2009, page 4 – 7