

COMPLETE DIGESTIVE STOOL ANALYSIS - Level 4+

MACROSCOPIC DESCRIPTION

	Result	Range	Markers
Stool Colour	TAN	Brown	Colour - Brown is the colour of normal stool. Other colours may indicate abnormal GIT conditions.
Stool Form	UNFORMED	Formed	Form -A formed stool is considered normal. Variations to this may indicate abnormal GIT conditions.
Mucous	+	< +	Mucous - Mucous production may indicate the presence of an infection, inflammation or malignancy.
Blood (Macro)	++	< +	Blood (Macro) - The presence of blood in the stool may indicate possible GIT ulcer, and must always be investigated immediately.

Macroscopy Comment

TAN or GREY coloured stool:

Consider biliary obstruction, pancreatic insufficiency (greasy stool) or steatorrhea.

Treatment:

- Investigate and treat possible underlying causes.
- Assess other CDSA markers such as pH, fat globules & pancreatic elastase 1.

MUCOUS PRESENT:

The presence of mucous (or pus), which are normally absent, can indicate Irritable Bowel Syndrome, intestinal wall inflammation (from infection), diverticulitis or other intestinal abscess.

Treatment:

- Investigate and treat possible underlying cause.
- Assess other CDSA markers such as calprotectin, M2PK & microbiology markers.

UNFORMED/LIQUID stools may indicate the presence of infection and/or inflammation.

Consider dysbiosis, food sensitivity, high dose vitamin C and magnesium, infection, intestinal permeability, laxative use, malabsorption, maldigestion, stress. Other causes: bacterial, fungal, viral and other parasitic infections.

Treatment:

- Investigate and treat possible underlying cause.
- Assess other CDSA markers such as pH, pancreatic elastase 1 & microbiology markers."

BLOOD PRESENT: Consider blood vessel injury, inflammation, infection, ulceration, hemorrhoids, severe constipation & other injury.

Treatment:

- Investigate the cause of bleeding using other diagnostic tools such as endoscopy
- Assess other CDSA markers such as calprotectin, H. pylori, M2PK & microbiology markers.

MICROSCOPIC DESCRIPTION

	Result	Range	Markers
RBCs (Micro)	+	< +	RBC(Micro) - The presence of RBCs in the stool may indicate the presence of an infection, inflammation or haemorrhage.
WBCs (Micro)	5	< 10	WBC(Micro) - The presence of WBCs in the stool may indicate the presence of an infection, inflammation or haemorrhage.
Food Remnants	ND	< ++	Food Remnants - The presence of food remnants may indicate maldigestion.
Fat Globules	ND	< +	Fat Globules -The presence of fat globules may indicate fat maldigestion.
Starch	ND	< +	Starch - The presence of starch grains may indicate carbohydrate maldigestion.

Microscopy Comment

RED BLOOD CELLS DETECTED: Consider blood vessel injury, inflammation, infection, ulceration, hemorrhoids, severe constipation & other injury.

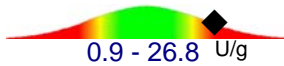
Treatment:

- Investigate the cause of bleeding using other diagnostic tools such as endoscopy
- Assess other CDSA markers such as calprotectin, H. pylori, M2PK & microbiology markers.

DIGESTIVE MARKERS

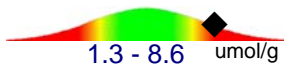
Chymotrypsin

29.0



Short Chain Fatty Acids, Putrefactive

10.1



Markers

Chymotrypsin - Chymotrypsin is involved in protein digestion. Low levels of chymotrypsin may indicate protein maldigestion due to pancreatic insufficiency.

Short Chain Fatty Acids, Putrefactive - Putrefactive SCFAs are produced when anaerobic bacteria ferment undigested protein, indicating protein maldigestion.

	Result	Range
Meat Fibres	ND	< +
Vegetable Fibres	ND	< ++

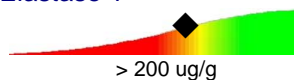
Markers

Meat Fibres - The presence of meat fibres may indicate maldigestion from gastric hypoacidity or diminished pancreatic output.

Vegetable Fibres - The presence of vegetable fibres may indicate maldigestion from gastric hypoacidity or diminished pancreatic output.

Pancreatic Elastase 1

187



Pancreatic Elastase is used to assess pancreatic exocrine function.

Pancreatic insufficiency is associated with diabetes mellitus, cholelithiasis, pancreatic tumour, cystic fibrosis and osteoporosis. This test is not affected by substitution therapy with enzymes of animal origin. PE-1 levels decline with age.

Digestive Markers Comment

Putrefactive SCFAs are ELEVATED:

Suspect hypochlorhydria, exocrine pancreatic insufficiency, or protein malabsorption.

Other causes include bacterial overgrowth of the small bowel, gastrointestinal disease, and/or rapid transit time.

Chymotrypsin ELEVATED:

Suspect rapid transit time (diarrhea) or excess pancreatic enzyme supplementation.

PANCREATIC ELASTASE: MILD TO MODERATE INSUFFICIENCY.

Pancreatic insufficiency reflects trypsin, chymotrypsin, amylase and lipase activity.

PE1 is also useful in monitoring exocrine pancreatic function caused by: Chronic pancreatitis, Autoimmunopathies & connective tissue diseases, Chronic inflammatory bowel disease, Intestinal malabsorption with mucosal atrophy.

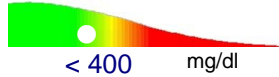
Treatment:

- Digestive enzyme supplementation
- A low-fat diet to control steatorrhea (excess fat in stools)
- Vitamin and mineral supplementation
- Investigate underlying causes for reduced pancreatic function (for eg. Coeliac disease, duodenal enteropathy, pancreatitis).

ABSORPTION MARKERS

Triglycerides, Stool

272



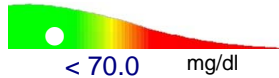
Long Chain Fatty Acids

2.3



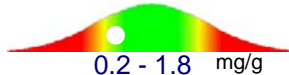
Cholesterol, Stool

30.4



Phospholipids

0.4



Markers

Triglycerides, Stool - Elevated levels of Triglycerides in the stool may indicate lipid maldigestion.

Long Chain Fatty Acids - Elevated levels of LCFAs in the stool may indicate inadequate lipid absorption.

Cholesterol, Stool - Elevated levels of Cholesterol in the stool may indicate inadequate absorption.

Phospholipids - Elevated levels of Phospholipids in the stool may indicate inadequate absorption.

METABOLIC MARKERS

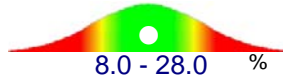
Short Chain Fatty Acids, Beneficial

12.2



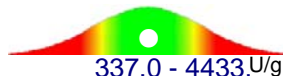
Butyrate

11.8



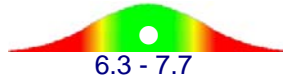
b-Glucuronidase

3645.0



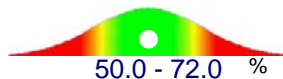
pH

7.4



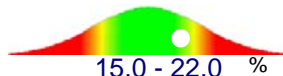
Acetate

66.7



Propionate

21.4



Markers

Short Chain Fatty Acids, Beneficial (Total) - Elevated SCFAs may indicate bacterial overgrowth. Inadequate SCFAs may indicate inadequate normal flora.

Butyrate - Decreased Butyrate levels may indicate inadequate colonic function.

b-Glucuronidase - Increased levels of b-Glucuronidase may reverse the effects of Phase II detoxification processes.

pH - Imbalances in gut pH, will influence SCFA production and effect.

Acetate - Decreased Acetate levels may indicate inadequate colonic function.

Propionate - Decreased Propionate levels may indicate inadequate colonic function.

INFLAMMATION MARKERS

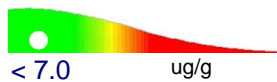
Transglutaminase IgA

58.0

10.0 - 100.0 ug/g

Comment- Tissue transglutaminase is the most specific test for Coeliac Disease. Gluten-sensitive patients react to Gliadin (found in wheat, barley and rye gluten) and to an antigenic component of the gut endomysium, now known to be tissue Transglutaminase (tTg), which uses gliadin as a substrate in creating antigenic neo-epitopes which generate the immune response in genetically susceptible individuals. After several weeks on a Gluten-free diet, tTg antibody levels may return towards normal levels.

Eosinophil Protein X

1.6


Comment -

Calprotectin

Range

Normal	<50 ug/g
69.0	Mildly Elevated 50 -100 ug/g
Highly Elevated	100+ - 250 ug/g
Extremely Elevated	>250 ug/g

Comments: Calprotectin is a protein that is abundant in neutrophilic granulocytes and is a sensitive and direct indicator of bowel inflammation. In patients with Inflammatory Bowel Disease (Crohn's Disease, Ulcerative Colitis), including those in relapse, there is a close positive correlation between faecal Calprotectin levels and the degree of inflammation; patients with Irritable Bowel Syndrome do not have elevated levels of Calprotectin. Calprotectin is very stable in stool samples.

Inflammation Markers Comment

CALPROTECTIN MILDLY ELEVATED:

MILD TO MODERATE inflammation of the GIT.

Patients without GIT inflammation and untreated IBS sufferers have levels below 50 ug/g.

The inflammatory response could be due to IBD, infection, polyps, neoplasia, or the use of non-steroidal anti-inflammatory drugs (NSAIDs).

Calprotectin may also be elevated in children with chronic diarrhea secondary to cow's milk allergy or multiple food allergies.

Whether inflammatory or neoplastic, the cause of elevated calprotectin MUST be ascertained by endoscopy or radiography. If these evaluations do not yield signs of overt disease, other tests may be considered to uncover causes of chronic bowel inflammation:

- o Intestinal Dysbiosis Assessment,
- o Allergy Antibody Assessment,
- o Celiac Panel,
- o Comprehensive Parasitology Profile.

FAECAL TRANSGLUTAMINASE IgA: Negative

Tissue Transglutaminase is the most specific test for Coeliac Disease.

Levels less than 100 are considered NEGATIVE.

Treatment: No treatment required. However, If there is clinical suspicion of Coeliac disease consider testing serum Coeliac markers.

TUMOUR/ULCER MARKERS**M2 Pyruvate Kinase**

2.7	Range
	<= 4U/ml
	>4 U/ml

Comment - The majority of human tumours strongly over-express the tumour M2 isoform of the glycolytic enzyme Pyruvate Kinase (M2-PK), which is released from tumour cells and is quantitatively detectable in body fluids. M2-PK is the key regulator of tumour metabolism and its measurement in faeces identifies gastrointestinal tumours, even in the absence of gastrointestinal bleeding.

H. PYLORI, Antigen**POSITIVE**

Comment - Helicobacter Pylori antigen indicates the patient's current status and is not affected by the presence of other organisms, antacids, barium sulphate, blood or fat. This test may be used on its own to monitor the success of eradication therapy one month after completion of the therapy.

Tumour/Ulcer Markers Comment**H. PYLORI ANTIGEN:**

This test, if POSITIVE, indicates the presence of a current infection and is not affected by the presence of other organisms, antacids, barium sulphate, blood or fat.

If the patient has diagnosed gastritis or a peptic ulcer consider:

- Standard triple therapy: eg. PPI, clarithromycin and amoxicillin/or metronidazole, 7-14 days
- Lactobacillus Probiotics

If the patient is asymptomatic consider natural products including:

- Black currant seed oil and fish oil
- Lactobacillus Probiotics
- Vitamin C
- Mastic gum.

M2-PYRUVATE KINASE: Negative

M2-PK values greater than 4 U/mL may indicate gastrointestinal adenoma, colorectal cancer or other gastrointestinal carcinomas.

Tumor M2-PK has a higher sensitivity than markers CEA and CA72-4, and is aM2-PK values greater than 4 U/mL may indicate gastrointestinal adenoma, colorectal cancer or other gastrointestinal carcinomas.

M2-PK has a lower sensitivity and specificity in diagnosing pancreatic cancer compared to Ca 19-9.

However, in patients with adenocarcinoma there is a simultaneous increase of M2-PK and Ca 19-9. In addition, M2-PK is more commonly elevated in metastatic disease and may be an additional criterium to decide on radical surgery of pancreatic cancer.

Tumor M2-PK has a higher sensitivity than markers CEA and CA72-4, and is a valuable tumor marker for the detection of gastrointestinal cancer.

BENEFICIAL BACTERIA

	Result	Range
Bifidobacteria	++	2 - 4 +
Lactobacilli	+	2 - 4 +
Eschericia coli	++	2 - 4 +
Enterococci	+	1 - 2 +

COMMENTS:

Significant numbers of Lactobacilli, Bifidobacteria and E coli are normally present in the healthy gut: Lactobacilli and Bifidobacteria, in particular, are essential for gut health because they contribute to 1) the inhibition of gut pathogens and carcinogens. 2) the control of intestinal pH, 3) the reduction of cholesterol, 4) the synthesis of vitamins and disaccharidase enzymes.

OTHER BACTERIA

	Result	Range
Klebsiella	ND	< +
Pseudomonas	ND	< +
Campylobacter	ND	< +
Citrobacter	ND	< +
Yersinia	ND	< +

COMMENTS:

Reduced numbers of these organisms - whether caused by antibiotic use, chronic maldigestion or bacterial overgrowth - leave the intestine susceptible to colonisation by pathogens and production of carcinogens. A reduction in the desirable levels of beneficial bacteria indicates the need for supplementation.

YEASTS

	Result	Range
Candida albicans	ND	< +
Other Yeasts	ND	< +

COMMENTS:

PARASITES

	Result	Range
Cryptosporidium	ND	< +
Giardia lamblia	ND	< +
Entamoeba Histolytica	ND	< +
Blastocystis Hominis	++	< +
Other Parasites	ND	< +

COMMENTS:

**TEST PATIENT**

Date of Birth : 01-Jan-1962

Sex : F

Collected : 24-May-2014

Lab id : 3358718

Dr. TEST DOCTORFIRST HEALTH JAPAN INC.
#105, 5-21-1 SHIMOMEGURO
MEGURO-KU,
TOKYO JAPAN 153-0064**MICROORGANISM SUMMARY****Blastocystis hominis PRESENT:**

The role of *B. hominis* in terms of colonization and disease is still considered controversial. When this organism is present in the absence of any other parasites, enteric organisms or viruses, it may be considered the etiological agent of disease.

Symptoms can include: diarrhea, cramps, nausea, fever, vomiting and abdominal pain.

B. hominis has been associated with irritable bowel syndrome, infective arthritis and intestinal obstruction.

Treatment: Metronidazole (Flagyl) is considered the most effective drug (750 mg tid x 10 days). Iodoquinol (Yodoxin) is also an effective medication (650 mg tid x 20 days). Recommended therapy can also eliminate *G. lamblia*, *E. histolytica* and *D. fragilis*, all of which may be concomitant undetected pathogens and part of patient symptomatology.

BENEFICIAL BACTERIA LEVELS LOW:

Consider possible causes and symptoms include antibiotics use, chlorinated water consumption, food allergy or sensitivity, IBS, IBD, inadequate dietary fiber or water, low intestinal sIgA, maldigestion, NSAIDs use, nutrient insufficiencies, parasite infection and slow transit time.

To Improve the levels of beneficial bacteria follow the four R's:

REMOVE

- Allergenic foods, Alcohol, NSAIDs, Pathogens, Sugar, refined carbohydrates, saturated fat, red meat, fermented foods

REPLACE

- Supplement hydrochloride, digestive enzymes or other digestive aids (see pancreatic elastase 1 results)

REINOCULATE

- Prebiotic and probiotic supplementation (see bacterial culture results)

REPAIR

- Use nutraceutical agents that will help heal the gastrointestinal lining. eg. L-glutamine, aloe vera, zinc, slippery elm.



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ANTIBIOTIC SENSITIVITIES

Penicillin.
Ampicillin
Erythromycin
Tetracycline
Sulphonamides
Trimethoprim
Ciprofloxacin
Gentamycin.
Ticarcillin
Tobramycin
Augmentin
Cephalexin

PARASITOLOGY

Wet Prep/Concentrate

Blastocystis hominis detected

Cryptosporidium, EIA

Negative

Giardia EIA

Negative

Entamoeba Histolytica EIA

Negative

Parasitology Comment

NO OTHER PARASITE ANTIGENS DETECTED