TEST PATIENT

Dr.TEST DOCTOR

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Date of Birth : 01-Jan-1962
Sex : F
Collected : 23/Aug/2019
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BURWOOD VIC 3125
Lab id : **3629216** UR#:

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COMPLETE DIGESTIVE STOOL ANALYSIS - Level 4

MACROSCOPIC DESCRIPTION

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

Macroscopy Comment

BROWN coloured stool is considered normal in appearance.

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MICROSCOPIC DESCRIPTION

	Result	Range	Markers
RBCs (Micro)	NEG	< +	**RBC(Micro)** - The presence of RBCs in the stool may indicate the presence of an infection, inflammation or haemorrhage.
WBCs (Micro)	0	< 10	**WBC(Micro)** - The presence of WBCs in the stool may indicate the presence of an infection, inflammation or haemorrhage.
Food Remnants	+	< ++	**Food Remnants** - The presence of food remnants may indicate maldigestion.
Fat Globules	+	< +	**Fat Globules** -The presence of fat globules may indicate fat maldigestion.
Starch	NEG	< +	**Starch** - The presence of starch grains may indicate carbohydrate maldigestion.
Meat Fibres	NEG	< +	**Meat Fibres** - The presence of meat fibres may indicate maldigestion from gastric hypoacidity or diminished pancreatic output.
Vegetable Fibres	+	< ++	**Vegetable Fibres** - The presence of vegetable fibres may indicate maldigestion from gastric hypoacidity or diminished pancreatic output.

Microscopy Comment

FAT GLOBULES PRESENT:
The presence of fat globules in faeces is an indirect indicator of incomplete fat digestion.
Consider high dietary fat intake, cholestasis, malabsorption & digestion (diarrhoea, pancreatic or bile salt insufficiency), intestinal dysbiosis, parasites, NSAIDs use, short bowel syndrome, whipples disease, Crohn's disease, food allergies & sensitivities.
Treatment:
- Prebiotic and probiotic supplementation
- Supplement hydrochloride, digestive enzymes or other digestive aids
- Investigate underlying causes
- Investigate food sensitivities and allergies
- Remove potential irritants
- Assess other CDSA markers such as pancreatic elastase 1, calprotectin, & microbiology markers.

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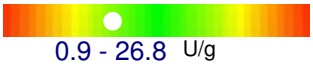
DIGESTIVE AND ABSORPTION MARKERS

Chymotrypsin

4.2

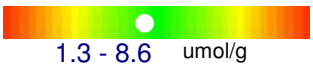


0.9 - 26.8 U/g

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

Short Chain Fatty Acids, Putrefactive

5.9

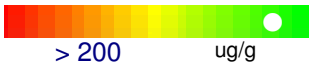


1.3 - 8.6 umol/g

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

Pancreatic Elastase 1

340



> 200 ug/g

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.

Long Chain Fatty Acids

17.0

1.3 - 23.7 mg/g

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

Absorption Comment

PANCREATIC ELASTASE: Normal exocrine pancreatic function.
Pancreatic Elastase reflects trypsin, chymotrypsin, amylase and lipase activity.
This test is not affected by supplements of pancreatic enzymes.
Healthy individuals produce on average 500 ug/g of PE-1. Thus, levels below 500 ug/g and above 200 ug/g suggest a deviation from optimal pancreatic function.
The clinician should therefore consider digestive enzyme supplementation if one or more of the following conditions is present:
Loose watery stools, Undigested food in the stools, Post-prandial abdominal pain, Nausea or colicky abdominal pain, Gastroesophageal reflux symptoms, Bloating or food intolerance.

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METABOLIC MARKERS AND SHORT CHAIN FATTY ACIDS

		Markers
Short Chain Fatty Acids, Beneficial	36.0	**Short Chain Fatty Acids, Beneficial (Total)** - Elevated SCFAs may indicate bacterial overgrowth. Inadequate SCFAs may indicate inadequate normal flora.
	> 13.6 umol/g	
Butyrate	19.0	**Butyrate** - Decreased Butyrate levels may indicate inadequate colonic function.
	10.8 - 33.5 %	
b-Glucuronidase	3213.0	**b-Glucuronidase** - Increased levels of b-Glucuronidase may reverse the effects of Phase II detoxification processes.
	337.0 - 4433. U/g	
pH	6.7	**pH** - Imbalances in gut pH, will influence SCFA production and effect.
	6.3 - 7.7	
Acetate	59.0	**Acetate** - Decreased Acetate levels may indicate inadequate colonic function.
	44.5 - 72.4 %	
Valerate	1.5	**Valerate** - Decreased Valerate levels may indicate inadequate colonic function.
	0.5 - 7.0 %	
Propionate	20.5	**Propionate** - Decreased Propionate levels may indicate inadequate colonic function.
	0.0 - 32.0 %	

Metabolic Markers Comment

In a healthy gut Short Chain Fatty Acids are exhibited in the following proportions;
Butyrate, Acetate, Propionate (16% : 60% : 24%)

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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 intetinal pH, 3) the reduction of cholesterol, 4) the synthesis of vitamins and disaccharidase enzymes.

OPPORTUNISTIC AND DYSBIOTIC BACTERIA

	Result	Range
Klebsiella	NEG	< +++
Citrobacter	NEG	< +++
Pseudomonas	NEG	< +++
Proteus	NEG	< +++
Campylobacter	NEG	< +
Salmonella	NEG	< +
Streptococcus	+	< +++
Yersinia	NEG	< +
Other Bacteria.	+	< +++

COMMENTS: Commensal bacteria are usually neither pathogenic nor beneficial to the host GI tract. Imbalances can occur when there are insufficient levels of beneficial bacteria and increased levels of commensal bacteria. Certain commensal bacteria are reported as dysbiotic at higher levels. Dysbiotic bacteria consist of known pathogenic bacteria and those that have the potential to cause disease in the GI tract. A detailed explanation of bacteria that may be present can be found in the Pathogen Summary at the end of this report.

YEASTS

	Result	Range
Candida albicans	NEG	< +
Geotrichum spp	NEG	< +
Rhodotorula spp	NEG	< +
Other Yeasts	+	< +

COMMENTS: Yeast may normally be present in small quantities in the skin, mouth, and intestine. A detailed explanation of yeast that may be present can be found in the Pathogen Summary at the end of this report.

PARASITES

	Result	Range
Blastocystis Hominis	NEG	< +
Dientamoeba fragilis	+	< +
Cryptosporidium	NEG	< +
Giardia lamblia	NEG	< +
Entamoeba Histolytica	NEG	< +
Other Parasites	NEG	< +

COMMENTS: Parasites are organisms that are not present in a normal/healthy GIT. A detailed explanation of parasites that may be present can be found in the Pathogen Summary at the end of this report.

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ANTIBIOTIC SENSITIVITIES and NATURAL INHIBITORS

Aeromonas hydrophila

Antibiotics

	Susceptible
Ampicillin	NO
Augmentin	NO
Ciprofloxacin	NO
Norfloxacin	NO
Meropenem	NO
Cephalothin	NO
Gentamycin.	NO
Trimethoprim/Sulpha	YES
Erythromycin	NO
Penicillin.	NO

Inhibitors

	Inhibition %
Berberine	60%
Black Walnut	60%
Caprylic Acid	60%
Citrus Seed	60%
Coptis	60%
Garlic-	60%
Golden seal	60%
Oregano	60%

LEGEND

Low Inhibition — High Inhibition

0	20	40	60	80	100

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WORM EXAMINATION

Ancylostoma duodenale, Roundworm	**Negative**
Ascaris lumbricoides, Roundworm	**Negative**
Necator americanus, Hookworm	**Negative**
Trichuris trichiura, Whipworm	**Negative**
Taenia species, Tapeworm	**Negative**

Negative results indicate the absence of detectable DNA in the sample for the worms reported

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PATHOGEN SUMMARY

OTHER BACTERIA PRESENT:

Organism	Result	Range	Classification

The following group of organisms are deemed commensal, being neither beneficial or pathogenic. Where present, often inadequate levels of beneficial bacteria are also noted. These organisms may become dysbiotic at high levels where treatment may become necessary.

Bacillus species	1+	0 - 3+	Non-Pathogen
Streptococcus agalactiae Group B	1+	0 - 3+	Non-Pathogen
Streptococcus salivarius	1+	0 - 3+	Non-Pathogen
Aeromonas hydrophila	1+ * H	<1+	**PATHOGEN**

OTHER YEASTS PRESENT:

Organism	Result	Range	Classification
NO FUNGAL ORGANISMS ISOLATED			

OTHER PARASITES PRESENT:

Organism	Result	Range	Classification
Dientamoeba fragilis	1+ * H	<1+	**PATHOGEN**

BACILLUS SPECIES:

Bacillus species are spore forming, gram-positive rods belonging to the Bacillaceae family. There are currently 50 valid species within the genus.

Sources:
Meat dishes are a common source of infection in other species of Bacillus such as B. subtilis and B. licheniformis.

Pathogenicity:
As yet, no toxins or other virulence factors have been identified in association with the symptoms that accompany non-B. cereus species.

Symptoms:
B. licheniformis and B. subtilis are associated with food-borne diarrheal illness.

Treatment:
B. species is almost always susceptible to clindamycin, erythromycin and vancomycin.

STREPTOCOCCUS:

Description:
Streptococcus is a common isolate from gut flora. With the exception of very rare cases, streptococcus species are not implicated in gastric pathogenesis. However, there has been correlations with the presence of streptococcus pyogenes in patients who have, or have recently had scarlet fever. Streptococcus species are also implicated in urinary tract infections and faecal flora are the common source of contamination for urinary tract infections.

Sources:
Recent infections with streptococcus pyogenes or scarlet fever can be linked to the presence of this species in faeces.

Treatment:
Treatment of streptococcus in gut flora is not always recommended. A practitioner may take into consideration a range of patient factors and symptoms to determine if treatment is necessary.

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AEROMONAS SPECIES:
Aeromonas is a gram-negative rod belonging to the Vibrionaceae family. There are at least four species of Aeromonas with A. hydrophilia being the most.

Sources:
Aeromonads are ubiquitous in fresh water environments. The number present is dependant on the extent of sewage pollution and the ambient temperature. Recent studies have directly attributed Aeromonas as the cause of food-borne infections. The following foods may harbor the organism: raw meat, freshwater fish, shellfish and other seafood. Raw milk can also be a source of infection.

Symptoms:
Aeromonas gastroenteritis may affect both children and adults with the highest seasonal incidence occurring in the summer months. Symptoms tend to be generally mild, self-limiting diseases with watery diarrhea. Bloody stools have been reported. Aeromonas infections tend to be more acute in children and more chronic in adults.

Treatment:
Aeromonas species are generally susceptible to cephalosporins, aminoglycosides, carbapenems, tetracyclines, Trimethoprim/sulfamethoxazole and quinolones. Susceptibility must guide testing.

DIENTAMOEBA FRAGILIS:
It is closely related to Histomonas and Trichomonas species. D. fragilis is known to cause non-invasive diarrheal illness in humans.90% of children are symptomatic, whereas only 15-20% of adults are. The most common symptoms associated with D. fragilis are intermittent diarrhea, fatigue, abdominal pain, fatigue, nausea, anorexia, malaise and unexplained eosinophilia. Diarrhea is predominately seen during the first 1-2 weeks of infection and abdominal pain may persist for 1-2 months.

Treatment:
Iodoquinol (650 mg tid x 20 days) or Tetracycline (500 mg qid x 10 days) or Metronidazole (500-750 mg tid x 10 days) have been used to treat D. fragilis. Another alternative is Paromomycin (500 mg tid x 7 days).

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The Four "R" Treatment Protocol

REMOVE	Using a course of antimicrobial, antibacterial, antiviral or anti parasitic therapies in cases where organisms are present. It may also be necessary to remove offending foods, gluten, or medication that may be acting as antagonists. Consider testing IgG96 foods as a tool for removing offending foods.	ANTIMICROBIAL	Oil of oregano, berberine, caprylic acid
		ANTIBACTERIAL	Liquorice, zinc carnosine, mastic gum, tribulus, berberine, black walnut, caprylic acid, oil of oregano
		ANTIFUNGAL	Oil of oregano, caprylic acid, berberine, black walnut
		ANTIPARASITIC	Artemesia, black walnut, berberine, oil of oregano
		ANTIVIRAL	Cat's claw, berberine, echinacea, vitamin C, vitamin D3, zinc, reishi mushrooms
		BIOFILM	Oil of oregano, protease
REPLACE	In cases of maldigestion or malabsorption, it may be necessary to restore proper digestion by supplementing with digestive enzymes.	DIGESTIVE SUPPORT	Betaine hydrochloride, tilactase, amylase, lipase, protease, apple cider vinegar, herbal bitters
REINOCULATE	Recolonisation with healthy, beneficial bacteria. Supplementation with probiotics, along with the use of prebiotics helps re-establish the proper microbial balance.	PREBIOTICS	Slippery elm, pectin, larch arabinogalactans
		PROBIOTICS	Bifidobacterium animalis sup lactise, lactobacillus acidophilus, lactobacillus plantarum, lactobacillus casei, bifidobacterium breve, bifidobacterium bifidum, bifidobacterium longum, lactobacillus salivarius ssp salivarius, lactobacillus paracasei, lactobacillus rhamnosus, Saccaromyces boulardii
REPAIR & REBALANCE	Restore the integrity of the gut mucosa by giving support to healthy mucosal cells, as well as immune support. Address whole body health and lifestyle factors so as to prevent future GI dysfunction.	INTESTINAL MUCOSA IMMUNE SUPPORT	Saccaromyces boulardii, lauric acid
		INTESTINAL BARRIER REPAIR	L-Glutamine, aloe vera, liquorice, marshmallow root, okra, quercetin, slippery elm, zinc carnosine, Saccaromyces boulardii, omega 3 essential fatty acids, B vitamins
		SUPPORT CONSIDERATION	Sleep, diet, exercise, and stress management