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**REILEY PATERSON**  
**08-Jun-1987**      **Male**

PARCEL LOCKER 10107 29749  
BROOME WA 6725

LAB ID : 3875499  
UR NO. : 6620680  
Collection Date : 06-Mar-2023  
Received Date:14-Mar-2023



3875499

## COMPLETE DIGESTIVE STOOL ANALYSIS - Level 2

### MACROSCOPIC DESCRIPTION

	Result	Range	Markers
Stool Colour	<b>Brown</b>	Brown	<b>Colour</b> - Brown is the colour of normal stool. Other colours may indicate abnormal GIT conditions.
Stool Form	<b>Formed</b>	Formed	<b>Form</b> -A formed stool is considered normal. Variations to this may indicate abnormal GIT conditions.
Mucous	<b>NEG</b>	< +	<b>Mucous</b> - Mucous production may indicate the presence of an infection, inflammation or malignancy.
Occult Blood	<b>NEG</b>	< +	<b>Occult Blood</b> - 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.

Faecal Occult Blood Negative:

Faecal occult blood has not been detected in this specimen. If the test result is negative and clinical symptoms persist, additional follow-up testing using other clinical methods is recommended.



## MICROSCOPIC DESCRIPTION

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

## Microscopy Comment

FOOD REMNANTS PRESENT: Consider hypochlorhydria, pancreatic insufficiency, inadequate chewing.  
Treatment:

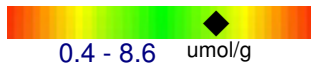
- Consider hydrochloride, digestive enzymes or other digestive aids
- Improve chewing
- Assess other CDSA markers such as pH, pancreatic elastase 1, H. pylori & other food fibres.



## DIGESTIVE AND ABSORPTION MARKERS

### Short Chain Fatty Acids, Putrefactive

9.1



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

### Pancreatic Elastase 1

>500



**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

<1.0



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

## Absorption Comment

### VEGETABLE FIBRES & CELLS PRESENT:

An indirect indicator of maldigestion from insufficient chewing, gastric hypoacidity, decreased bile salts or diminished pancreatic output.

### 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.

### Putrefactive SCFAs are ELEVATED:

Suspect hypochlorhydria, exocrine pancreatic insufficiency, or protein malabsorption.

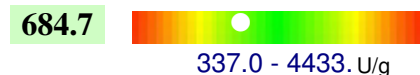
Other causes include bacterial overgrowth of the small bowel, gastrointestinal disease, and/or rapid transit time.



## METABOLIC MARKERS

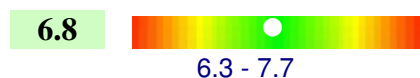
### Markers

#### b-Glucuronidase



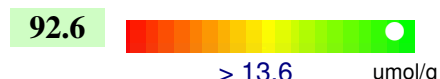
**b-Glucuronidase** - Increased levels of b-Glucuronidase may reverse the effects of Phase II detoxification processes.

#### pH



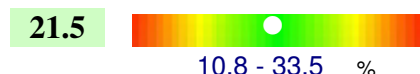
**pH** - Imbalances in gut pH, will influence SCFA production and effect.

#### Short Chain Fatty Acids, Beneficial



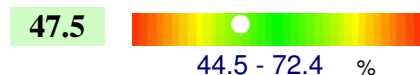
**Short Chain Fatty Acids, Beneficial (Total)** - Elevated SCFAs may indicate bacterial overgrowth. Inadequate SCFAs may indicate inadequate normal flora.

#### Butyrate



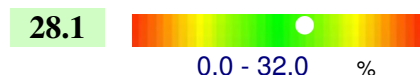
**Butyrate** - Decreased Butyrate levels may indicate inadequate colonic function.

#### Acetate



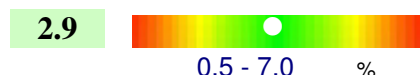
**Acetate** - Decreased Acetate levels may indicate inadequate colonic function.

#### Propionate



**Propionate** - Decreased Propionate levels may indicate inadequate colonic function.

#### Valerate



**Valerate** - Decreased Valerate levels may indicate inadequate colonic function.

### Metabolic Markers Comment

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

The primary SCFAs butyrate, propionate and acetate are produced by predominant commensal bacteria via fermentation of soluble dietary fibre and intestinal mucus glycans.

Key producers of SCFAs include Faecalibacterium prausnitzii, Akkermansia muciniphila, Bacteroides fragilis, Bifidobacterium, Clostridium and Lactobacillus Spp.

The SCFAs provide energy for intestinal cells and regulate the actions of specialised mucosal cells that produce anti-inflammatory and antimicrobial factors, mucins that constitute the mucus barriers, and gut active peptides that facilitate appetite regulation and euglycemia. Abnormal SCFAs may be associated with dysbiosis, intestinal barrier dysfunction and inflammatory conditions.



BENEFICIAL BACTERIA	Result	Range		Result	Range
Bifidobacterium longum.	1+ *L	2 - 4+	Lactobacillus plantarum	1+ *L	2 - 4+
Bifidobacterium bifidum	3+	2 - 4+	Lactobacillus rhamnosus.	3+	2 - 4+
Bifidobacterium animalis	4+	2 - 4+	Lactobacillus paracasei	2+	2 - 4+
Bifidobacterium pseudocaten.	2+	2 - 4+	Lactobacillus casei	1+ *L	2 - 4+
Bifidobacterium breve	2+	2 - 4+	Lactobacillus acidophilus	1+ *L	2 - 4+
Escherichia coli	4+	2 - 4 +	Enterococci	1+	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.

#### PATHOGENIC BACTERIA

Organism	Growth	Range	Classification
Aeromonas species	<b>ISOLATED</b>		
Campylobacter	<b>NEG</b>		
Salmonella	<b>NEG</b>		
Shigella	<b>NEG</b>		
Yersinia	<b>NEG</b>		

#### COMMENTS:

The above Pathogenic Bacteria are those that have the potential to cause disease in the GI tract. A result of **ISOLATED** may require a notification to the Department of Health and also cross tested via a secondary method such as PCR or sequencing. Should this be the case, you will also be notified.

#### OPPORTUNISTIC AND DYSBIOTIC BACTERIA

Organism	Growth	Range	Classification
Morganella morganii	4+ *H	< 4+	Possible Pathogen
Providencia alcalifaciens	4+ *H	< 4+	Possible Pathogen
Enterococcus faecalis.	3+	< 4+	Non-Pathogen
Enterococcus faecium.	3+	< 4+	Non-Pathogen
Enterococcus casseliflavus	2+	< 4+	Non-Pathogen

#### 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.



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## YEASTS

Organism	Growth	Range	Classification
Candida albicans	NEG	< ++	
Geotrichum spp	NEG	< ++	
Rhodotorula spp	NEG	< ++++	
Other Yeasts	NEG	< ++++	

### COMMENTS:

No Yeast or Fungal organisms isolated

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

Blastocystis Hominis	<b>DETECTED</b>
Dientamoeba fragilis	NOT DETECTED
Cryptosporidium	NOT DETECTED
Giardia lamblia	NOT DETECTED
Entamoeba Histolytica	NOT DETECTED
Other Parasites	NOT DETECTED

**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.



## ANTIBIOTIC SENSITIVITIES and NATURAL INHIBITORS

	Morganella morganii	Providencia alcalifaciens
Antibiotics	Susceptible	Susceptible
Amoxicillin	N/A	N/A
Ampicillin	R	N/A
Augmentin	R	N/A
Ciprofloxacin	S	N/A
Norfloxacin	S	N/A
Meropenem	S	N/A
Cefazolin	N/A	N/A
Gentamycin.	S	N/A
Trimethoprim/Sulpha	S	N/A
Erythromycin	S	N/A
Penicillin.	N/A	N/A

### LEGEND

S = Sensitive	R = Resistant	N/A = Not Tested
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### Inhibitors

	Inhibition %	Inhibition %
Berberine	80%	60%
Black Walnut	60%	40%
Caprylic Acid	40%	100%
Citrus Seed	60%	60%
Coptis	60%	40%
Garlic-	100%	60%
Golden seal	40%	20%
Oregano	20%	20%

### LEGEND

Low Inhibition

High Inhibition

0	20	40	60	80	100
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## YEAST - SENSITIVITIES and NATURAL ANTIFUNGALS

### Antifungals

Fluconazole

Voriconazole

Itraconazole

### INHIBITION CATEGORY

<b>R</b>	Resistant	This category indicates that the organism is not inhibited by obtainable levels of the pharmaceutical agent
<b>I</b>	Intermediate	This category indicates where the minimum inhibition concentrations (MIC) approach obtainable pharmaceutical agent levels and for which response rates may be lower than for susceptible isolates
<b>SDD</b>	Susceptible, Dose Dependent	This category indicates that clinical efficacy is achieved when higher than normal dosage of a drug is used to achieve maximal concentrations
<b>S</b>	Susceptible	This category indicates that the organisms are inhibited by the usual achievable concentration of the agent
<b>NI</b>	No Interpretative Guidelines	This category indicates that there are no established guidelines for MIC interpretation for these organisms

### Non-absorbed Antifungals

Nystatin

### Natural Antifungals

Berberine.

Garlic

Black Walnut.

Citrus Seed.

Coptis.

Golden seal.

Oregano.

### LEGEND

Low Inhibition

High Inhibition





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## **PATHOGEN SUMMARY**

### **ENTEROCOCCUS:**

#### **Description:**

Enterococcus species are gram-positive bacterium that are part of normal flora in the human gut. It can however be implicated in a variety of infections of which urinary tract infections are the most common. These infections can be exceptionally difficult to treat due to the genus exhibiting antibiotic resistance.

#### **Sources:**

Enterococcus infections spread from person to person through poor hygiene. Because these bacteria are found in faeces, people can transmit the infection if they don't wash their hands after using the bathroom. The bacteria can get into food or onto common touched surfaces.

#### **Treatment:**

Treatment of Enterococcus species in gut flora may not be necessary or recommended. However, overgrowth of this genus may be implicated in other infections such as urinary tract infections. Enterococci are challenging to treat due their drug-resistant mechanisms. Ampicillin is the preferred antibiotic used to treat enterococci infections if required.

### **MORGANELLA MORGANII:**

#### **Sources:**

M. morganii originates from the gill and skin of fish. It is possible that it may cross-contaminate during handling of fish in processing plants and restaurants.

#### **Pathogenicity:**

The role of Morganella as an etiological agent in diarrheal disease is controversial. Although Morganella constitutes part of the normal flora, in certain hosts it may be a potential pathogen. Recently it was shown that the majority of clinical isolates of Morganella belonged to the subsp Morganii.

#### **Symptoms:**

Diarrhea has been associated with infection of this organism

#### **Treatment:**

Currently, standard texts provide no specific antimicrobial guidelines for GI overgrowth of Morganella. Carbapenems, 3rd and 4th generation cephalosporins and fluroquinolones are the agents recommended for extra-intestinal infections.

### **PROVIDENCIA ALCALIFACIENS:**

#### **Sources:**

GI tract infection with P. alcalifaciens has been associated with overseas travel.

#### **Pathogenicity:**

Providencia is not normally present in a healthy GI tract. Its pathogenic role may lie in the ability of the organism to take advantage of conditions created by other infectious microbes.

#### **Symptoms:**

This organism has been implicated as a cause of diarrhea. P. alcalifaciens is thought to induce invasive diarrhea in patients by invading cells in the intestine, thus producing inflammatory changes in the ileum.

#### **Treatment:**

Currently, standard texts provide no specific antimicrobial guidelines for GI overgrowth of Providencia. 3rd generation cephalosporins and fluroquinolones are recommended for extra-intestinal sites.



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**BLASTOCYSTIS HOMINIS:**

Blastocystis hominis may be the cause of persistent, mild diarrhoea. It is endemic in Australia, although it may also be associated with recent overseas travel. Detection suggests the ingestion of contaminated material or contact with farm animals. Continued symptoms may require further testing for the detection of bacterial, viral and/or parasitic co-pathogens.

**TREATMENT SUGGESTIONS:**

Mild symptoms are self-limiting.

If treatment is warranted, metronidazole 400 - 750mg (child 12-17mg/kg up to 750mg) three times daily for at least 10 days.

Lower dosages are usually associated with treatment failure.

Rule out allergy to above medication before prescribing/taking. Consult ID specialist if patient is showing severe symptoms or immunocompromised.



# 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, zincarnosine, mastic gum, tribulus, berberine, black walnut, caprylic acid, oil of oregano
		ANTIFUNGAL	Oil of oregano, caprylic acid, berberine, black walnut
		ANTIPARASTIC	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 subsp lactise, lactobacillus acidophilus, lactobacillus plantarum, lactobacillus casei, bifidobacterium breve, bifidobacterium bifidum, bifidobacterium longum, lactobacillus salivarius subsp salivarius, lactobacillus paracasei, lactobacillus rhamnosus, Saccharomyces 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	Saccharomyces boulardii, lauric acid
		INTESTINAL BARRIER REPAIR	L-Glutamine, aloe vera, liquorice, marshmallow root, okra, quercetin, slippery elm, zincarnosine, Saccharomyces boulardii, omega 3 essential fatty acids, B vitamins
		SUPPORT CONSIDERATION	Sleep, diet, exercise, and stress management