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Date of Birth : 24-Feb-1996
 Sex : F
 Collected : 21/Feb/2022
 Received: 24-Feb-2022
 3/8 TOWER STREET
 MANLY NSW 2095
 Lab id : **3799288** UR#: 6599788

6 EDWARDS BAY ROAD
 MOSMAN NSW 2088

COMPLETE DIGESTIVE STOOL ANALYSIS - Level 3

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 indicate 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 Fibre	+	< ++	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

Short Chain Fatty Acids, Putrefactive

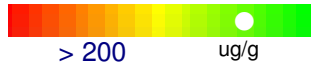
1.0



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

Pancreatic Elastase 1

243



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



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.



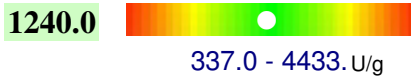
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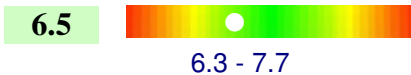
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METABOLIC MARKERS

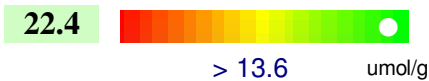
b-Glucuronidase



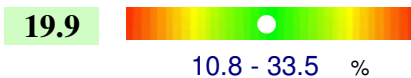
pH



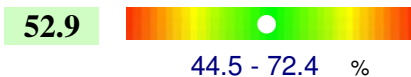
Short Chain Fatty Acids, Beneficial



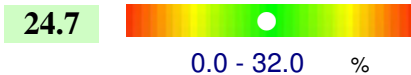
Butyrate



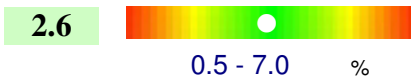
Acetate



Propionate



Valerate



Markers

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.

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.

Acetate - Decreased Acetate levels may indicate inadequate colonic function.

Propionate - Decreased Propionate levels may indicate inadequate colonic function.

Valerate - Decreased Valerate levels may indicate inadequate colonic function.

Metabolic Markers Comment

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

VALERATE:

Valerate is a short chain fatty acid that is important for gut health. Although Acetate, propionate, and butyrate make up the the most abundant SCFAs in gastrointestinal tract (95%), Valerate and other SCFA's make up the remaining and work optimally when within range.



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TUMOUR/ULCER MARKERS

H. PYLORI, Antigen

Negative

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.



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

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	Organism	Growth	Range	Classification
Enterococcus casseliflavus	4+ *H	< 4+	Possible Pathogen	Enterococcus faecalis.	4+ *H	< 4+	Possible Pathogen
Citrobacter freundii	3+	< 4+	Non-Pathogen	Enterobacter cloacae	3+	< 4+	Non-Pathogen
Enterococcus faecium.	3+	< 4+	Non-Pathogen	Raoultella ornithinolytica	3+	< 4+	Non-Pathogen
Klebsiella variicola	2+	< 4+	Non-Pathogen	Streptococcus salivarius	2+	< 4+	Non-Pathogen
Klebsiella pneumoniae	1+	< 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 Parapsilosis	1+	< ++	Non-Pathogen
Candida albicans	NEG	< ++	
Geotrichum spp	NEG	< ++	
Rhodotorula spp	NEG	< ++++	
Other Yeasts	NEG	< ++++	

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
Blastocystis Hominis	NOT DETECTED
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.



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ANTIBIOTIC SENSITIVITIES and NATURAL INHIBITORS

	Klebsiella pneumoniae	Citrobacter freundii	Enterococcus faecalis.	Enterococcus casseliflavus	Klebsiella variicola	
Antibiotics	Susceptibl	Susceptible	Susceptible	Susceptible	Susceptible	Susceptible
Amoxicillin	N/A	N/A	N/A	N/A	N/A	N/A
Ampicillin	R	R	N/A	N/A	N/A	N/A
Augmentin	S	R	N/A	N/A	N/A	N/A
Ciprofloxacin	S	S	N/A	N/A	N/A	N/A
Norfloxacin	S	S	N/A	N/A	N/A	N/A
Meropenem	S	N/A	N/A	N/A	N/A	N/A
Cefazolin	N/A	N/A	N/A	N/A	N/A	N/A
Gentamycin.	S	S	N/A	N/A	N/A	N/A
Trimethoprim/Sulpha	S	S	N/A	N/A	N/A	N/A
Erythromycin	S	S	N/A	N/A	N/A	N/A
Penicillin.	N/A	N/A	N/A	N/A	N/A	N/A

LEGEND

S = Sensitive

R = Resistant

N/A = Not Tested

Inhibitors

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

LEGEND

Low Inhibition

High Inhibition

0

20

40

60

80

100



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YEAST - SENSITIVITIES and NATURAL ANTIFUNGALS

Candida Parapsilosis

Antifungals

Inhibition

Fluconazole

8=S

Voriconazole

>=8=R

Itraconazole

INHIBITION CATEGORY

R	Resistant	This category indicates that the organism is not inhibited by obtainable levels of the pharmaceutical agent
I	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
SDD	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
S	Susceptible	This category indicates that the organisms are inhibited by the usual achievable concentration of the agent
NI	No Interpretative Guidelines	This category indicates that there are no established guidelines for MIC interpretation for these organisms

Non-absorbed Antifungals

Inhibition %

Nystatin

60%

Natural Antifungals

Inhibition %

Berberine.

60%

Garlic

60%

Black Walnut.

40%

Citrus Seed.

40%

Coptis.

20%

Golden seal.

20%

Oregano.

20%

LEGEND

Low Inhibition

High Inhibition





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PATHOGEN SUMMARY

KLEBSIELLA:

Sources:

Isolated from foods and environmental sources.
Klebsiella appears to thrive in individuals on a high starch diet.
Avoiding carbohydrates such as rice, potatoes, flour products and sugary foods reduces the amount of Klebsiella in the gut

Pathogenicity:

Part of the normal GI flora in small numbers, but can be an opportunistic pathogen.
Klebsiella is capable of translocating from the gut when in high numbers.
Certain strains of *K. oxytoca* have demonstrated cytotoxin production.

Symptoms:

K. pneumoniae and *K. oxytoca* have been associated with diarrhea in humans.
Cytotoxin-producing strains are associated with acute hemorrhagic enterocolitis.
Increased colonization of Klebsiella in the stool has been found in HLA-B27 + AS patients.

Treatment:

Currently, standard texts provide no specific antimicrobial guidelines for GI overgrowth of Klebsiella.
Third generation cephalosporins and fluoroquinolones are the recommended antimicrobial agents for extra-intestinal sites.

Other Herbal antimicrobials include:

Lemon and clove, Burr marigold, Thyme, Licorice, euphorbia, cordyceps.

CITROBACTER:

Sources:

Common in the environment and may be spread by person-to person contact. Several outbreaks have occurred in babies in hospital units. Isolated from water, fish, animals and food.

Pathogenicity:

Citrobacter is considered an opportunistic pathogen and therefore can be found in the gut as part of the normal flora.

Symptoms:

Citrobacter has occasionally been implicated in diarrheal disease, particularly *C. freundii* and *C. diversus* and *C. koseri*

Treatment:

Currently, standard texts provide no specific antimicrobial guidelines for GI overgrowth of Citrobacter.
Carbapenems and fluoroquinolones are the recommended antibiotics for extraintestinal sites.

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



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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.

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.

ENTEROBACTER COMPLEX:

Sources:

Widely distributed in the environment.
 Water, soil, sewage and cornstalks have all been identified as sources of contamination.

Pathogenicity:

Usually considered a commensal organism; however, strains of E.b cloacae have been shown to produce a heat-stable toxin similar to that produced by E.coli.

Symptoms:

Has been associated with diarrhea in children.

Treatment:

Currently, standard texts provide no specific antimicrobial guidelines for GI overgrowth of Enterobacter.
 Carbapenems are recommended for extraintestinal sites.

RAOULTELLA:

Sources:

Isolated from foods and environmental sources.
 Raoultella appears to thrive in individuals on a high starch diet.
 Avoiding carbohydrates such as rice, potatoes, flour products and sugary foods reduces the amount of Raoultella in the gut.

Pathogenicity:

Part of the normal GI flora in small numbers, but can be an opportunistic pathogen.
 Raoultella is capable of translocating from the gut when in high numbers.

Symptoms:

Raoultella species have been associated with diarrhea in humans.
 Cytotoxin-producing strains are associated with acute hemorrhagic enterocolitis.
 Increased colonization of Raoultella in the stool has been found in HLA-B27 + AS patients.

Treatment:

Currently, standard texts provide no specific antimicrobial guidelines for GI overgrowth of Raoultella .
 Third generation cephalosporins and fluroquinolones are the recommended antimicrobial agents for extra-intestinal sites.



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Other Herbal antimicrobials include:

Lemon and clove, Burr marigold, Thyme, Licorice, euphobia, cordyceps.

CANDIDA

Sources:

Most sources of Candida infection are thought to be of endogenous origin. While yeast are ubiquitous in the environment and are found on fruits, vegetables and other plant materials, contamination from external sources is linked to patients and health care workers.

Pathogenicity:

A normal inhabitant of the GI tract. May become an opportunistic pathogen after disruption of the mucosal barrier, imbalance of the normal intestinal flora and/or impaired immunity. Risk factors for colonization include: Antibiotics, corticosteroids, antacids, H2 blockers, oral contraceptives, irradiation, GI surgery, Diabetes mellitus, burns, T cell dysfunction, chronic stress and chronic renal disease.

Symptoms:

The most common symptom attributable to non-invasive yeast overgrowth is diarrhea. Symptoms of chronic candidiasis affect four main areas of the body.

1. Intestinal system - symptoms include: diarrhea, constipation, abdominal discomfort, distention, flatulence and rectal itching.
 2. Genital Urinary system - symptoms include: menstrual complaints, vaginitis, cystitis and urethritis.
 3. Nervous system - symptoms include: severe depression, extreme irritability, inability to concentrate, memory lapses and headaches.
 4. Immune system - symptoms include urticaria, hayfever, asthma, and external otitis.
- Sensitivities to tobacco, perfumes, diesel fumes and other chemicals.

Treatment:

Currently, standard texts provide no specific antifungal guidelines for GI overgrowth of Candida.

Oral azoles have been recommended for extra intestinal infections.

Susceptibility testing is advised due to increasing drug resistance.



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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 subsp lactise, lactobacillus acidophilus, lactobacillus plantarum, lactobacillus casei, bifidobacterium breve, bifidobacterium bifidum, bifidobacterium longum, lactobacillus salivarius, 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, zinc carnosine, Saccharomyces boulardii, omega 3 essential fatty acids, B vitamins
		SUPPORT CONSIDERATION	Sleep, diet, exercise, and stress management