MARIA NICOLI -.KELLY HEALEY

NutriPATH
Integrative Pathology Services
P: 1300 688 522
E: info@nutripath.com.au
A: PO Box 442 Ashburton VIC 3142

Date of Birth : 20-Sep-1987
Sex : F
Collected : 2/Apr/2019
Received: 03-Apr-2019
5/132 LEBANON STREET
STRATHMORE (ESSENDON NORTH) VIC 3041
Lab id : **3602127** UR#:

47 LANSELL ROAD
TOORAK VIC 3142

COMPLETE DIGESTIVE STOOL ANALYSIS - Level 2

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	**ND**	< +	**Mucous** - Mucous production may indcate the presence of an infection, inflammation or malignancy.
Blood (Macro)	**ND**	< +	**Blood (Macro)**- 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.

MICROSCOPIC DESCRIPTION

	Result	Range	Markers
RBCs (Micro)	**ND**	< +	**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	**ND**	< +	**Fat Globules** -The presence of fat globules may indicate fat maldigestion.
Starch	**ND**	< +	**Starch** - The presence of starch grains may indicate carbohydrate maldigestion.

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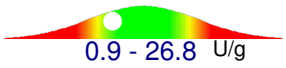
DIGESTIVE MARKERS

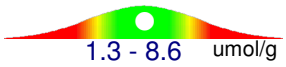
Chymotrypsin

2.3



Short Chain Fatty Acids, Putrefactive

5.8



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	+	< ++

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.

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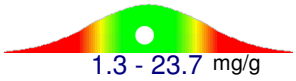
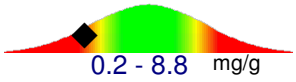
ABSORPTION MARKERS

Triglycerides, Stool
3.5


Long Chain Fatty Acids
16.6


Cholesterol, Stool
3.8


Phospholipids
0.1


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.

Absorption Markers Comment

Faecal Triglycerides are ELEVATED:
Suspect incomplete fat hydrolysis. Rule out Bile insufficiency, Reduced pancreatic function, High fat diet, Hypochlorhydria.

Faecal Cholesterol ELEVATED.
Suspect malabsorption, increased mucosal turnover, bacterial overgrowth of the small intestine.

Phospholipid levels LOW:
Suspect insufficient dietary fat intake, dietary phospholipid deficiency, or impaired gall bladder function.

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METABOLIC MARKERS

Markers

Short Chain Fatty Acids, Beneficial
125
> 13.6 umol/g

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

Butyrate
15.8
10.8 - 33.5 %

Butyrate - Decreased Butyrate levels may indicate inadequate colonic function.

b-Glucuronidase
5823.0
337.0 - 4433.U/g

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

pH
6.6
6.3 - 7.7

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

Acetate
58.8
44.5 - 72.4 %

Acetate - Decreased Acetate levels may indicate inadequate colonic function.

Propionate
25.4
0.0 - 32.0 %

Propionate - Decreased Propionate 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%)

beta GLUCURONIDASE ELEVATED:
Suspect increased activation and enterohepatic recirculation of toxins, hormones, and various drugs within the body. Increased burden on glucuronidation pathway is associated with increased risk of colorectal, prostate and breast cancers.

Treatment:
Consider Calcium-D-glucarate which may assist with lowering B-glucuronidase levels. It is also suggested to introduce a low-calorie/vegetarian diet for 4 weeks which may also be beneficial with lowering faecal B-glucuronidase levels.

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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.

OTHER BACTERIA

	Result	Range
Klebsiella	ND	< +++
Citrobacter	++++	< +++
Pseudomonas	ND	< +++
Campylobacter	ND	< +
Yersinia	ND	< +
Other Bacteria.	+++	< +++

COMMENTS:

YEASTS

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

COMMENTS:

PARASITES

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

COMMENTS:

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MICROORGANISM SUMMARY

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.
Ideally, Bifidobacteria should be recovered at levels of 4+, whilst Lactobacillus and E. coli should be 2+ or greater.
To Improve the levels of beneficial bacteria follow the four R's:
REMOVE
• Allergenic foods, Alcohol, NSAIDs, Pathogens, Sugar, refined carbohyrates, 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.

Adequate levels of Bifidobacteria detected.

CITROBACTER PRESENT:
Citrobacter is considered an opportunistic pathogen and therefore can be found in the gut as normal flora. It is occasionally implicated in diarrheal disease, particularly C. freundii, C. diversus and C. koseri.

Treatment: Currently no specific antimicrobial guidelines for GI overgrowth of Citrobacter exist. Carbapenems and fluroquinolones are the antibiotics of choice for extra-intestinal sites.
Low numbers of the bacteria should be ignored whilst supplementing with adequate levels of probiotics if indicated.

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ANTIBIOTIC SENSITIVITIES and NATURAL INHIBITORS

	Citrobacter freundii
Antibiotics	
	Susceptible
Penicillin.	NO
Ampicillin	NO
Erythromycin	NO
Tetracycline	YES
Sulphonamides	YES
Trimethoprim	YES
Ciprofloxacin	YES
Gentamycin.	NO
Ticarcillin	NO
Tobramycin	NO
Augmentin	NO
Cephalexin	NO
Inhibitors	
	Inhibition %
Berberine	60%
Oregano	60%
Plant Tannins	80%
Uva-Ursi	60%

LEGEND

Low Inhibition — High Inhibition

0	20	40	60	80	100

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YEAST - SENSITIVITIES and NATURAL ANTIFUNGALS

Geotrichum species

Antifungals

	Inhibition
Fluconazole	32=NI
Voriconazole	0.25=NI
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 inhibiition 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 efficay 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 interpreatation for these organisams

Non-absorbed Antifungals

	Inhibition %
Nystatin	60%

Natural Antifungals

	Inhibition %
Berberine.	40%
Caprylic Acid	100%
Garlic	100%
Undecylenic Acid	80%
Uva-Ursi.	80%

LEGEND

Low Inhibition — High Inhibition

0	20	40	60	80	100

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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.

alpha-haemolytic Streptococcus	3+	0 - 3+	Non-Pathogen
gamma-haemolytic Streptococcus	2+	0 - 3+	Non-Pathogen
Enterobacter aerogenes	3+	0 - 3+	Non-Pathogen
Citrobacter freundii	4+ * H	0 - 3+	POSSIBLE Pathogen

OTHER YEASTS PRESENT:

Organism	Result	Range	Classification
Geotrichum species	1+	0 - 1+	Non-Pathogen

OTHER PARASITES PRESENT:

Organism	Result	Range	Classification
NO PARASITIC ORGANISMS DETECTED			

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 fluroquinolones are the recommended antibiotics for extraintestinal sites.

GEOTRICHUM SPECIES:
Geotrichum are yeast belonging to the Endomyceteaceae family.

Sources:
This organism can be found in soil, dairy products and in human skin and mucosae.

Pathogenicity:
Usually only considered an opportunistic pathogen in immune-compromised hosts. Geotrichum candidum is the etiological agent of Geotrichosis. Geotrichum may also play a role in IBS.

Symptoms:
Symptoms of Geotrichum infection have been associated with diarrhea and enteritis.
Symptoms of Geotrichosis may resemble those of candidiasis.

Treatment:
Currently, standard texts provide no specific antifungal guidelines for GI overgrowth of Geotrichum.
Oral azoles and have been recommended for extra intestinal infections. Susceptibility testing is advised

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owing to increasing drug resistance.