LAUREN NEWMAN -.ALEXANDRA MIDDLETON

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Date of Birth : 18-Aug-1980
Sex : F
Collected : 21-Sep-2016
3/10 EVANS AVENUE
EASTLAKES (ROSEBERY) NSW 2018
Lab id : **3447020** UR#:

1A IRIS ST
PADDINGTON NSW 2021

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	Semiformed	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.

SEMI FORMED stools may indicate dysbiosis, food allergy or intolerance, laxative use, high dose Vitamin C and magnesium. May also indicate an infection (bacterila or viral), amoeba or Giardia, Irritable Bowel Syndrome,Intestinal permeablilty, Coeliac Disease, malabsorption, maldigestion or stress.
Treatment:
- Investigate and treat possible underlying cause.
- Assess other CDSA markers such as pH, pancreatic elastase 1 & microbiology markers.

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

9.3

Short Chain Fatty Acids, Putrefactive

6.2

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.

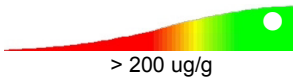
Vegetable Fibres - The presence of vegetable fibres may indicate maldigestion from gastric hypoacidity or diminished pancreatic output.

Digestive Markers 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.

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.

Digestive Markers Comment

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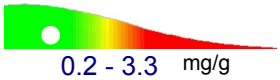
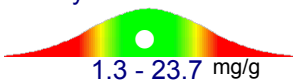
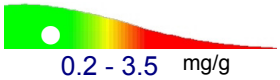
ABSORPTION MARKERS

Triglycerides, Stool
1.8

0.2 - 3.3 mg/g

Long Chain Fatty Acids
14.2

1.3 - 23.7 mg/g

Cholesterol, Stool
1.5

0.2 - 3.5 mg/g

Phospholipids
3.0

0.2 - 8.8 mg/g

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.

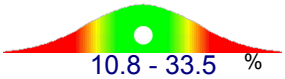
Cholesterol, Stool - Elevated levels of Cholesterol in the stool may indicate inadequate absorption.

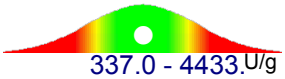
Phospholipids - Elevated levels of Phospholipids in the stool may indicate inadequate absorption.

METABOLIC MARKERS

Short Chain Fatty Acids, Beneficial
51.0

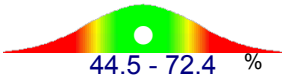
> 13.6 umol/g

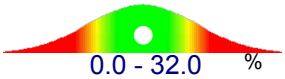
Butyrate
16.3

10.8 - 33.5 %

b-Glucuronidase
3559.0

337.0 - 4433.U/g

pH
6.7

6.3 - 7.7

Acetate
54.1

44.5 - 72.4 %

Propionate
16.2

0.0 - 32.0 %

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.

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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	< +++
Pseudomonas	ND	< +++
Campylobacter	ND	< +
Citrobacter	+++	< +++
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	< +
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	60%
Uva-Ursi	60%

LEGEND

Low Inhibition — High Inhibition

0	20	40	60	80	100

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YEAST - SENSITIVITIES and NATURAL ANTIFUNGALS

Rhodotorula species

Antifungals

	Inhibition
Fluconazole	>64=NI
Voriconazole	
Itraconazole	1.0=NI

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.	20%
Caprylic Acid	20%
Garlic	60%
Undecylenic Acid	40%
Uva-Ursi.	60%

LEGEND

Low Inhibition — High Inhibition

0	20	40	60	80	100

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PATHOGEN SUMMARY

OTHER BACTERIA PRESENT:

Organism	Result	Range	Classification
alpha-haemolytic Streptococcus	3+	0 - 3+	Non-Pathogen
gamma-haemolytic Streptococcus	2+	0 - 3+	Non-Pathogen
Citrobacter freundii	3+	0 - 3+	Non-Pathogen

OTHER YEASTS PRESENT:

Organism	Result	Range	Classification
Rhodotorula species	1+	0 - 3+	Non-Pathogen

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.

YEAST NOT CANDIDA, RHODOTORULA SPECIES, TRICHOSPORON SPECIES
Sources:
Yeast are ubiquitous in the environment and can be found on fruits, vegetables and other plant materials.
They can also live as normal inhabitants both within and on the body
ar Pathogenicity:
Less common yeast such as those outlined in this section should only be considered opportunistic pathogens in the Immunocompromised host.

Symptoms:
Disseminated infections may include the intestinal tract and are usually associated with immunosuppressive diseases or conditions such as leukemia, organ transplant, multiple myeloma, aplastic anemia, diabetes mellitus with ketoacidosis, ICU patients, lymphoma, solid tumors and AIDS. Immunosuppressive therapy such as corticosteroids, chemotherapeutic agents and cyclosporine can also enhance fungal overgrowth.

Treatment:
Currently, standard texts provide no specific antifungal guidelines for GI overgrowth of the fungi mentioned.
Treatment is at the discretion of the practitioner, and should be based upon clinical symptoms and a positive reculture of the organism.