Dr Henry Butt ***MSc PhD***

BIOSCREEN
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Report of Faecal Microbiology

Patient Name:	Rocco JOYCE
Address:	46 Sunshine St
	Manly Vale NSW 2093
Date of Birth:	31/08/2021
Name of Requesting Practitioner:	Robyn COSFORD
Laboratory Number:	158542
Date of Sample Collection:	15/03/2024
Date of Sample Processing	20/03/2024
Date of Report Issued:	02/04/2024

Dear Dr Robyn COSFORD,

Thank you for referring your patient to Bioscreen.

The following is a summary of our faecal microbiota testing from your patient's sample.

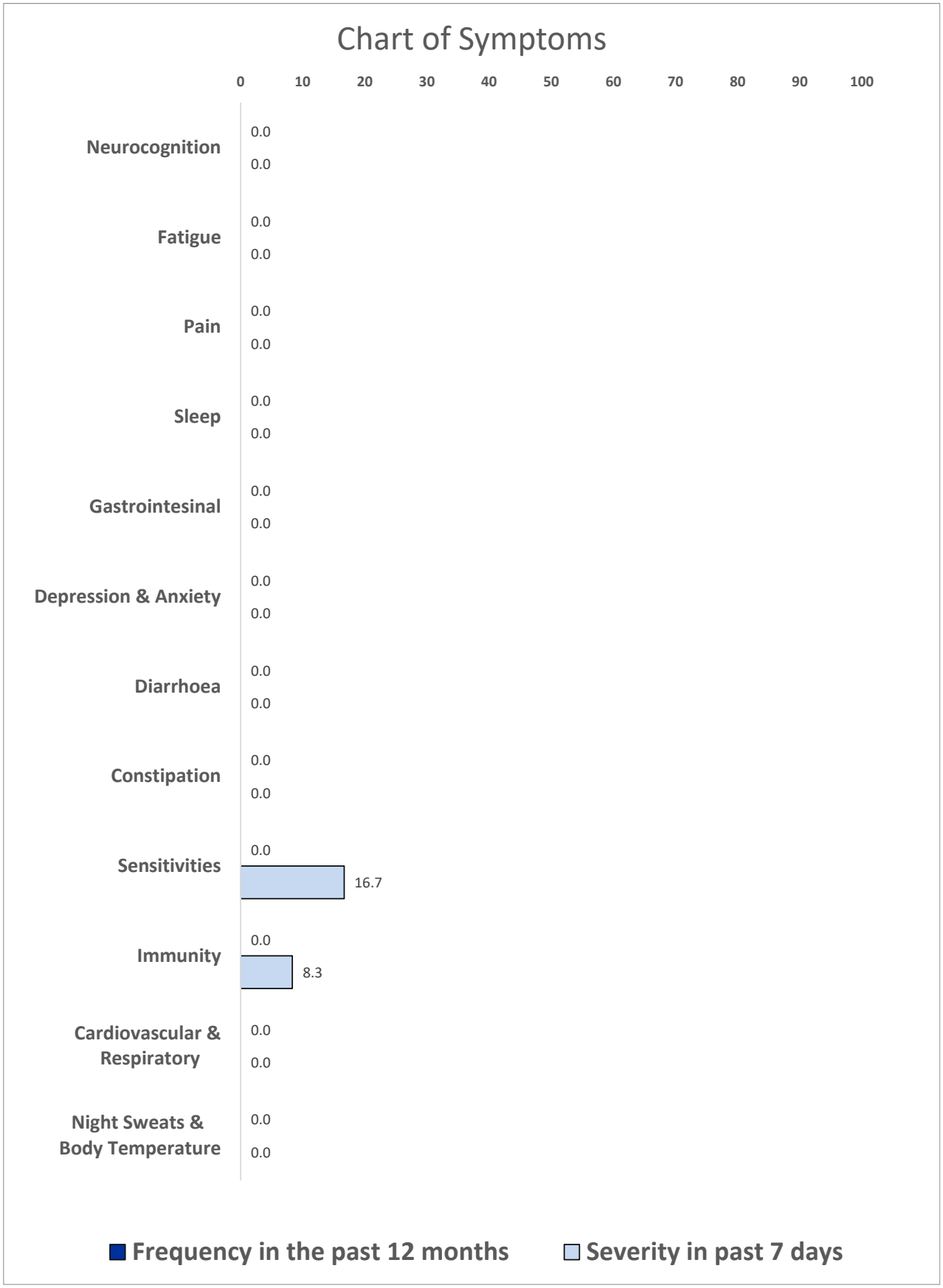
Chart of Symptoms
0
10
20
30
40
50
60
70
80
90
100
Neurocognition
0.0
0.0
Fatigue
0.0
0.0
Pain
0.0
0.0
Sleep
0.0
0.0
Gastrointesinal
0.0
0.0
Depression & Anxiety
0.0
0.0
Diarrhoea
0.0
0.0
Constipation
0.0
0.0
Sensitivities
0.0
16.7
Immunity
0.0
8.3
Cardiovascular & Respiratory
0.0
0.0
Night Sweats & Body Temperature
0.0
0.0
Frequency in the past 12 months
Severity in past 7 days

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Detailed Report, Faecal Microbiology

	Count cfu/g	Counts Reference Range cfu/g	Comment	Distribution % Total Count	Distribution Reference Range
Bacterial Count (Total)	8.4×10^{10}	1.0×10^{9} - 1.0×10^{12}	Within Ref Range		
Facultative Anaerobe [Aerobe] Counts	2.2×10^{7}	1.0×10^{7} - 1.0×10^{8}	Within Ref Range		
Anaerobe Count	8.4×10^{10}	1.0×10^{8} - 1.0×10^{12}	Within Ref Range		

Aerobe:Anaerobe Ratio: 0.3 (Reference Range is 0.5 - 4.0)

Facultative Anaerobe [Aerobe] Counts

	Count cfu/g	Counts Reference Range cfu/g	Comment	Distribution % Total Count	Distribution Reference Range
Aerobe Count (total)	2.2×10^{7}	1.0×10^{7} - 1.0×10^{8}	Within Ref Range		
Escherichia coli coliform (Total)	9.4×10^{6}	7.0×10^{6} - 9.0×10^{7}	Within Ref Range		
Escherichia coli	9.4×10^{6}			43.4%	70-90%
Enterococcus (Total)	1.2×10^{7}	$<5.0 \times 10^{5}$	High	56.4%	<5%
Enterococcus faecium	1.2×10^{7}			56.4%	
Streptococcus (Total)	6.6×10^{3}	$<3.0 \times 10^{5}$	Within Ref Range	< 0.01%	<5%
Streptococcus vestibularis	6.6×10^{3}			< 0.01%	
Staphylococcus (Total)	3.8×10^{4}	$<2.0 \times 10^{5}$	Within Ref Range	0.2%	<5%
Staphylococcus aureus	3.8×10^{4}	$<2.0 \times 10^{5}$		0.2%	

	Count cfu/g	Counts Reference Range cfu/g	Comment	Distribution % Total Count	Distribution Reference Range
Faecal Fungi (Total)	7.7×10^{3}	$<1.0 \times 10^{4}$	Within Ref Range		
Candida albicans	6.6×10^{3}				
Candida parapsilosis	1.1×10^{3}				

Anaerobe Counts

	Count cfu/g	Counts Reference Range cfu/g	Comment	Distribution % Total Count	Distribution Reference Range
Anaerobe Count (total)	8.4×10^{10}	1.0×10^{8} - 1.0×10^{12}	Within Ref Range		
Bacteroides and related genera (Total)	2.7×10^{10}	5.0×10^{8} - 9.5×10^{11}	Within Ref Range	31.9%	85-95%
Bacteroides uniformis	9.7×10^{9}			11.6%	
Alistipes finegoldii	9.4×10^{9}			11.2%	
Bacteroides thetaiotaomicron	9.4×10^{8}			1.1%	
Phocaeicola vulgatus	2.0×10^{9}			2.4%	
Bacteroides clarus	3.8×10^{9}			4.5%	
Phocaeicola plebeius	9.4×10^{8}			1.1%	
Prevotella (Total)	9.4×10^{9}	$<5.0 \times 10^{8}$	High	11.2%	<10%
Prevotella copri	9.4×10^{9}			11.2%	
Eubacterium and related genera (Total)	$<9.0 \times 10^{7}$	1.0×10^{8} - 1.0×10^{9}	Low	< 0.01%	<15%
Lactobacillus and related genera (Total)	$<5.0 \times 10^{5}$	5.0×10^{5} - 1.0×10^{7}	Low	< 0.01%	0.5-2%
Lacticaseibacillus paracasei	9.4×10^{4}			< 0.01%	
Lactobacillus acidophilus	2.8×10^{5}			< 0.01%	
Bifidobacterium and related genera (Total)	4.8×10^{10}	5.0×10^{5} - 5.0×10^{8}	High	56.9%	5-11%
Bifidobacterium adolescentis	4.7×10^{10}			56%	
Bifidobacterium bifidum	7.5×10^{8}			0.9%	

Examples of Scientific Notation of Powers of Ten

$10^2 = 10 \times 10 = 100$ $10^3 = 10 \times 10 \times 10 = 1{,}000$ $3.5 \times 10^2 = 3.5 \times 10 \times 10 = 3500$

Summary Report, Faecal Microbiology

Total Aerobe Count: 2.2 x 10^7 cfu/g (colony forming units/g)

Total Anaerobe Count: 8.4 x 10^{10} cfu/g

Aerobe: Anaerobe Ratio is: 0.3. The Reference Range is 0.5 to 4.

Comment: This ratio is below the reference range.

Aerobe:Anaerobe Ratio - Low

- A low aerobe:anaerobe ratio is usually due to a low count of Echerichia coli. Growth of aerobes is promoted by a diet that is high in fructooligosaccharides. Galactose may be given as a prebiotic. Oral E coli probiotics may also be given to increase the count of E. Coli in the gut.

Faecal Aerobes

Enterococcus sp.: Overgrowth

Comments

Streptococcus/Enterococcus

- Enterococcus spp. are Gram positive, facultative anaerobic organisms and are classified as homofermenative, producing only lactic acid from glucose catabolism and generally regarded as potent D- and L-lactic acid producers (Bioscreen data).
- Increased distribution of lactic acid bacteria (Streptococcus, Enterococcus sp.) may lower the colonic pH[1] and has been reported to :(1) modify faecal microbial metabolism particularly the Bacteroides and Bifidobacterium spp, resulting in a decreased production of volatile fatty acids[2], and (2) alter intestinal epithelial barrier function increasing passive intestinal permeability to small and large molecules. However, this consideration requires further study.
- High colonization of faecal lactic acid bacteria (Streptococcus, Enterococcus sp.) significantly and positively correlate with cognitive dysfunctions (nervousness, memory loss, forgetfulness, confusion, mind going blank)[3,4,5,6], and sleep patterns (Bioscreen data).
- Increased proportion of lactic acid may result in a change in the distribution of the anaerobic microbial flora. This change of the fecal flora may affect the production of primary bile acids and influencing the bile acid composition in both the bile and the intestine[7]. The possibility of fat malabsorption may occur. However, this consideration requires further study.
- If indicated, ampicillin/amoxycillin may assist in the suppression of the faecal Enterococcus spp. Zinc bacitracin may be a suitable alternative if patient is reported to have adverse reactions to the penicillins. Bacitracin is a non-absorbable antibiotic; however, potential nephrotoxicity and allergic reactions may occur in patients with intestinal permeability[8].

Faecal Anaerobes

Prevotella sp.: Overgrowth
Bifidobacterium sp.: Overgrowth
Lactobacillus sp.: Undergrowth
Eubacterium sp.: Undergrowth

Comments

Prevotella/Porphyromonas sp.

- Prevotella, and Porphyromonas spp are anaerobic Gram negative bacilli, previously classified in the genus Bacteroides. Both genera are generally referred to as the 'pigmented', bile-sensitive anaerobes composing of saccharolytic and asaccharolytic species with Prevotella spp. being saccharolytic and Porphyromonas spp. asaccharolytic.
- The relative absence of Bacteroides fragilis and an increased distribution of Prevotella spp. may reflect a low availability of bile acids in the gastrointestinal tract. Prevotella copri has been implicated in rheumatoid arthritis
- Consider supplementing bile salt to aid digestion and to suppress the pigmented anaerobes (eg Prevotella spp.) if indicated.

Bifidobacterium/Lactobacillus sp.

- Members of the genus Bifidobacterium are Gram positive branching bacilli and lactic acid producing bacteria. A few members can grow in a microaerophilic environment; but most are obligate anaerobes.
- High levels of Bifidobacterium spp. in the anaerobic microbial flora. Increased level of Bifidobacterium may stimulate amine production[9]. Similarly, increased levels of this organism may also lower the colonic pH[1], modifying faecal microbial metabolism particularly the Bacteroides spp, resulting in a decreased production of volatile fatty acids[2], and altering intestinal epithelial barrier function increasing passive intestinal permeability to small and large molecules.
- Cease all oral supplementation of lactic acid probiotics if indicated. If required, consider an antimicrobial agent (eg. ampicillin) to assist in the suppression of the organisms Bifidobacterium spp.
- Members of the genus Lactobacillus are Gram positive bacilli and lactic acid producing bacteria. A few members can grow in a microaerophilic environment; but most are obligate anaerobes.
- Low levels of Lactobacillus spp. detected. Oral Supplementation of Lactobacillus probiotics may be beneficial. Consider the intake of vitamin B6 and biotin to promote lactobacilli growth[10,11].

Eubacterium sp.

- Eubacterium sp is member of the intestinal microbial flora of human, and is regarded as one of the most frequently recovered organisms in the gastrointestinal tract, second only to the Bacteroides spp.
- The organism is responsible for the deconjugation of bile acids and the production of butyric acids.
- The organism requires the amino acids arginine and citrulline for growth.

Faecal Fungi

- Faecal fungi were recovered and the % abundance was within the normal range.

If you require further assistance please contact Bioscreen and arrange a consultation.

Report authorised 2nd April, 2024 by Dr Henry Butt.

Bioscreen Pty Ltd.

References

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