CO-BIOME By MICROBA

CLINICAL CONVERSATIONS

Gut Matters:
A Clinical Lens on Gastrointestinal Health Disorders

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Meet your speakers

Dr Brad Leech
Nutritionist and Lead Clinical Educator

Alyssa Tait
Naturopath and Physiotherapist

Hayley Parcell
Nutritionist and Head of Co-Biome™ Healthcare

All participants have been muted

Questions will be answered at the end of each case study

Add your questions in the chat to have them answered live

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Disclaimers

- The information provided in this webinar is for the use of qualified healthcare professionals.
- The information contained in this webinar is in no way to be taken as prescriptive or to replace a healthcare professional's duty of care and personalised care practices.
- The clinical opinions and patient case studies shared by presenters are solely those of the individual presenters and do not necessarily represent the view of Co-Biome.

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Learning objectives

1. Assess your patient's microbiome and gastrointestinal health results using a clinical lens.
2. Interpret microbiome profiles on a personalised level to better examine your patient's unique microbiome and the interplay with their gastrointestinal presentation.
3. Apply personalised diet, supplement and lifestyle insights to shift the gut microbiome ecosystem.
4. Adapt your approach based on clinical outcomes and ongoing patient management.
5. Address challenges related to the interpretation and implementation of microbiome-derived interventions.

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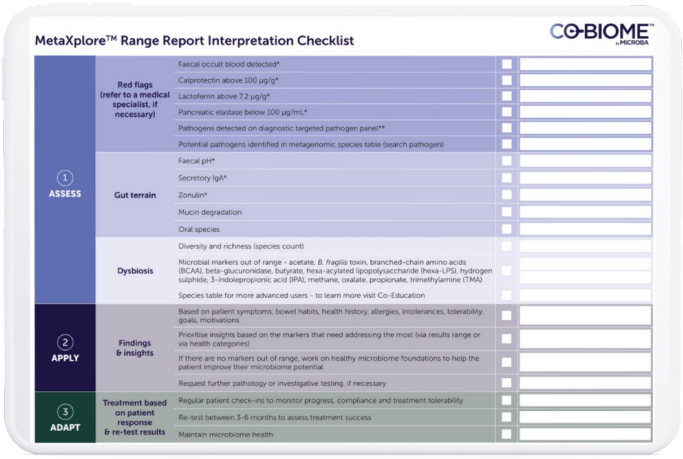

MetaXplore™ Range Report Interpretation Checklist

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1 ASSESS	Red flags (refer to a medical specialist, if necessary)	Faecal occult blood detected*	☐	
		Calprotectin above 100 µg/g*	☐	
		Lactoferrin above 7.2 µg/g*	☐	
		Pancreatic elastase below 100 µg/mL*	☐	
		Pathogens detected on diagnostic targeted pathogen panel**	☐	
		Potential pathogens identified in metagenomic species table (search pathogen)	☐	
	Gut terrain	Faecal pH*	☐	
		Secretory IgA*	☐	
		Zonulin*	☐	
		Mucin degradation	☐	
		Oral species	☐	
	Dysbiosis	Diversity and richness (species count)		
		Microbial markers out of range - acetate, *B. fragilis* toxin, branched-chain amino acids (BCAA), beta-glucuronidase, butyrate, hexa-acylated lipopolysaccharide (hexa-LPS), hydrogen sulphide, 3-indolepropionic acid (IPA), methane, oxalate, propionate, trimethylamine (TMA)	☐	
		Species table for more advanced users - to learn more visit Co-Education		
2 APPLY	Findings & insights	Based on patient symptoms, bowel habits, health history, allergies, intolerances, tolerability, goals, motivations	☐	
		Prioritise insights based on the markers that need addressing the most (via results range or via health categories)	☐	
		If there are no markers out of range, work on healthy microbiome foundations to help the patient improve their microbiome potential	☐	
		Request further pathology or investigative testing, if necessary	☐	
3 ADAPT	Treatment based on patient response & re-test results	Regular patient check-ins to monitor progress, compliance and treatment tolerability	☐	
		Re-test between 3-6 months to assess treatment success	☐	
		Maintain microbiome health	☐	

MetaXplore™ Range Report Interpretation Checklist

Helping you interpret your patient's report and decode their inner ecosystem

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Overview: Using gut microbiome and gastrointestinal testing in gastrointestinal health disorders

IBS-M
55-year-old female

IBS-C
36-year-old female

Constipation and bloating
42-year-old female

Ankylosing spondylitis without GI symptoms
37-year-old male

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Case 1: IBS-M

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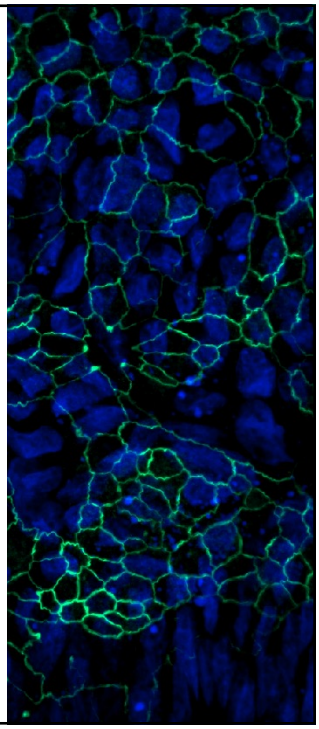

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Age/Gender: 55/Female

Diagnosed conditions: IBS-M

Case history:

- FODMAPS sensitive, symptoms of aches, foggy feeling and frequent headaches
- History of constipation alternating with diarrhoea, feeling of fullness, and incomplete emptying
- Joint pain triggered by gluten intake and frequent UTIs
- All symptoms started after the birth of first child

Medication/supplements: Magnesium Hydroxide (laxative)

Diet: Low FODMAP

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Patient treatment goals

Short-term	Medium-term	Long-term
Regulate bowels	Tolerate FODMAP foods	Reduce joint pain

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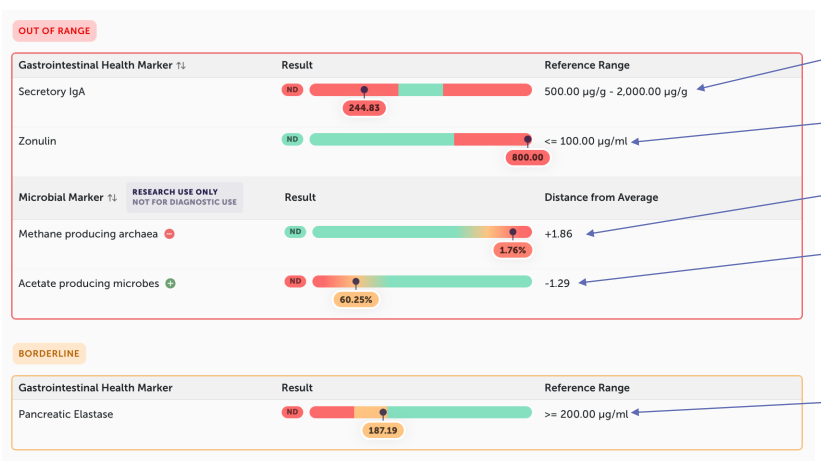
MetaXplore test results



MUCOSAL IMMUNITY

INTESTINAL PERMEABILITY

MOTILITY

INTESTINAL INFLAMMATION

DIGESTIVE SECRETIONS

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Assess: Outcome of testing

Red flags	Gut terrain	Dysbiosis
No red flags	High zonulin Low secretory IgA	High methane Low acetate

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Apply: Patient management plan

Dietary prescription	Specific prebiotic prescription	Personalised supplement recommendations	Patient education
Limited dietary changes due to sensitivities. Suggested conscious eating habits, chew food thoroughly, eat in a relaxing environment.	No prebiotics were prescribed as the patient is sensitive to FODMAPs. Patient reports reactions to prebiotics.	Targeted prescriptions were given based on the MetaXplore results.	I educated the patient on the impact of increased intestinal permeability on her clinical symptoms.

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Management

Supplement	July	August	September	October	November	December	January	February	March
Ginger, pepper, Gentiana	3x daily	3x daily	3x daily						
Gut powder with glutamine & SB	5g 2x daily	5g 2x daily	5g 2x daily						
Amino acids	6g daily	6g daily	6g daily						
L. Reuteri DSM 17938	1 x daily	1 x daily	1 x daily						
Thyroid supplement		2 x daily	2 x daily	2 x daily	2 x daily	2 x daily	2 x daily	2 x daily	2 x daily
Probiotic				1 x daily	1 x daily	1 x daily	1 x daily	1 x daily	1 x daily
Mg with gut nutrients				8g daily	8g daily	8g daily	8g daily	8g daily	8g daily

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"All symptoms have improved (food intolerances/constipation/diarrhoea/headaches/foggy/ joint pain/frequent UTIs)."

"I'm no longer avoiding FODMAP foods, I've been adding them back into my diet."

"I can now eat gluten without getting brain fog and joint pain."

"I still get some fullness feeling in the stomach and incomplete emptying."

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Gastrointestinal Symptom Rating Scale

Before	After
Reflux: No discomfort at all	**Reflux**: No discomfort at all
Abdominal pain: Mild discomfort	**Abdominal pain**: Slight discomfort
Indigestion: Moderate discomfort	**Indigestion**: Slight discomfort
Diarrhoea: Moderate discomfort	**Diarrhoea**: Slight discomfort
Constipation: Moderately severe discomfort	**Constipation**: Mild discomfort
GSRS: Moderate discomfort	**GSRS**: Slight discomfort

10 months

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Results of re-testing

10 months between tests

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Change in zonulin

Zonulin back in range

97%

Discussion topic

Glutamine, SB and amino acids are suggested to reduce zonulin.

Reduction in zonulin correlates with clinical symptoms.

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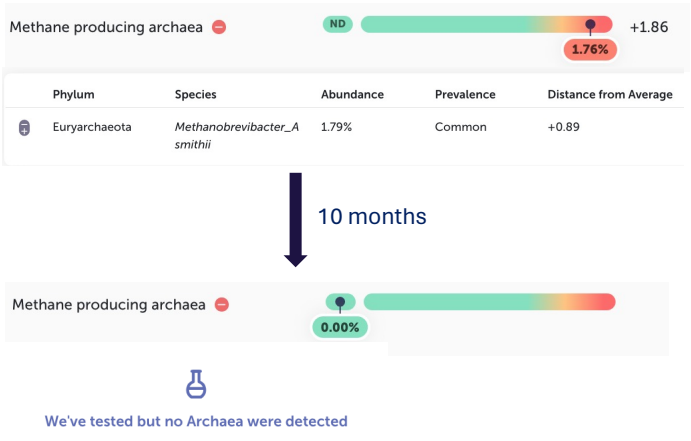
Change in methane



Methane producing archaea

100%

Discussion topic

L. Reuteri DSM 17938 is suggested to reduce methane.

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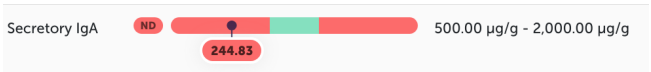
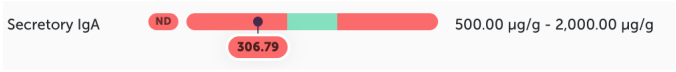
Change in secretory IgA



10 months



Secretory IgA increased

25%

Discussion topic

Probiotics containing *Bifidobacterium animalis* ssp *lactis* BI-04 had slight impact; further interventions are required.

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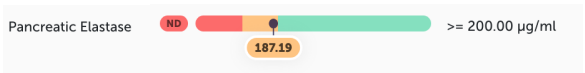
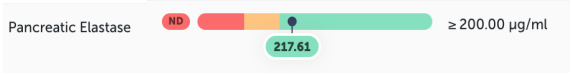
Change in pancreatic elastase



10 months



Pancreatic elastase increased

16%

Discussion topic

Conscious eating habits and digestive herbs may support with stomach acid production.

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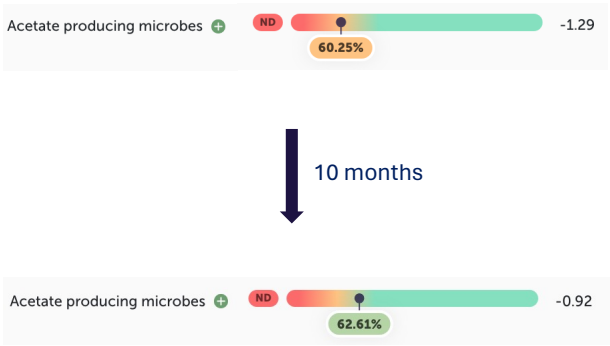
Change in acetate



Acetate increased

4%

Discussion topic

No targeted intervention given for acetate. Further interventions are required.

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Change in diversity

Diversity reduced

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Discussion topic

Without targeted interventions to feed the microbiome, microbial diversity and richness reduced.

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Change in oral species

We've tested but no Oral Species were detected

10 months

	Phylum	Species	Abundance	Prevalence	Distance from Average
	Firmicutes	*Lactobacillus_B salivarius*	0.02%	Rare	
	Firmicutes	*Lactobacillus_C paracasei*	0.01%	Rare	
	Firmicutes	*Lactobacillus_C rhamnosus*	0.01%	Less common	-1.40

Increase in oral species

3

Discussion topic

Does the detection of these oral species require treatment intervention?

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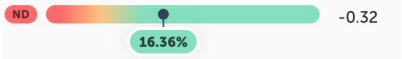
Change in butyrate

Butyrate producing microbes



10 months

Butyrate producing microbes

Butyrate decreased to out of range

26%

Discussion topic

No targeted intervention given for butyrate as butyrate was 'in range'. Further interventions are required.

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Change in pH

pH increase to out of range

Discussion topic

This result reflects the change in butyrate and transit time.

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Assess: Outcome of testing

Red flags	Gut terrain	Dysbiosis
No red flags	Low secretory IgA High pH	Low butyrate Low acetate

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Clinical outcome and ongoing management plan
Supplements:

Low secretory IgA	Switch probiotic to *Bifidobacterium lactis* BB12 Add 4g of GOS daily for 3 months Add *Saccharomyces boulardii* 250mg
Low butyrate	3.5g of beta-glucan 15g of green banana flour
High pH	15g of green banana flour
Low acetate	15g of green banana flour

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Clinical outcome and ongoing management plan
Dietary:

Low secretory IgA	GOS rich foods
Low butyrate	Beta-glucan rich foods Pectin rich foods
High pH	Increase dietary fibre from grains
Low acetate	Pectin rich foods

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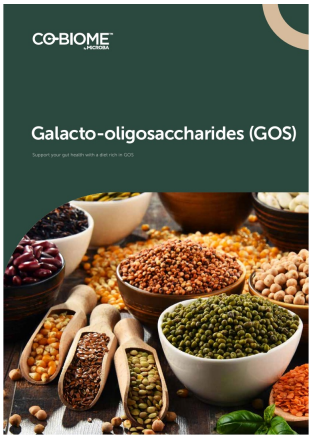
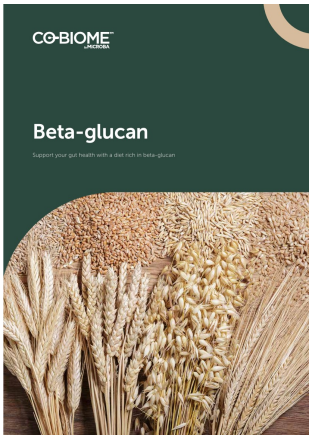
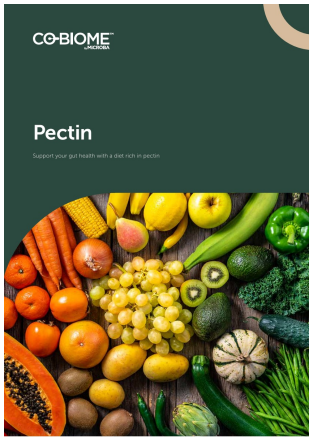
Patient handouts







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Case 1 key takeaways

1. Clinical symptoms improved with a change in microbial markers most likely methane and zonulin
2. Waiting 10 months to re-test resulted in negative change in the microbiome
3. Measuring the microbiome at 3-4 months would have resulted in greater clinical improvements
4. Consider prebiotics in early stage of treatment
5. Some probiotics can show up as oral species, remember to check with patients

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Q&A: Case 1

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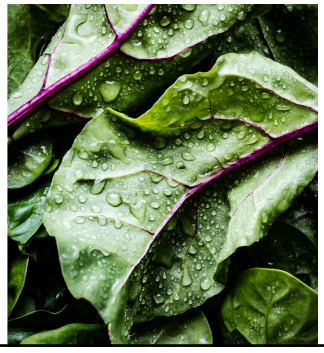
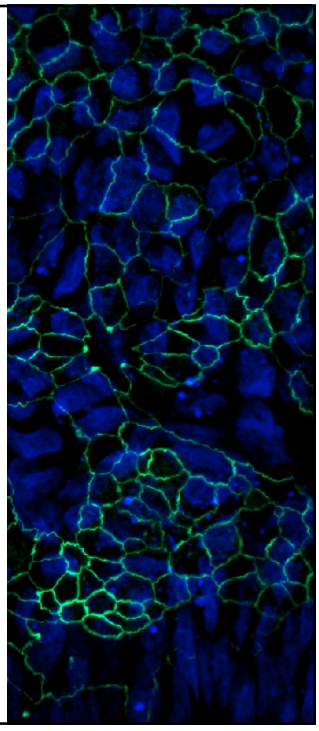
Case 2: IBS-C

Alyssa Tait





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Age: 36 **Gender:** Female

Case history: Lifelong constipation with abdominal bloating and loud flatulence, aggravated by unexpected divorce.

Prior antibiotic and antimicrobial treatment for small intestinal bacterial overgrowth (SIBO) based on methane-positive lactulose breath test/glucose breath test that improved bowel movement regularity but no change to bloating/abdominal pain/excess gas.

Investigations:

- Colonoscopy - NAD except "90% success of prep"
- CT – faecal loading
- Endoscopy – ruled out coeliac disease, disaccharidase deficiency

Medication/supplements: creatine

Diet: Dairy-free; meat, fish, egg and vegetables, low grain (puffed millet), sourdough bread, kiwifruit

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Patient treatment goals

Short-term	Medium-term	Long-term
Alleviate symptoms Determine if gut microbiome or gut function aspects explains symptoms	Reduce gas and bloating by addressing gut-related mediators, promote effective bowel emptying	Optimise gut microbiome for gut and systemic health Continue to address underlying causes

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Short-term goal

Prebiotic risky for tolerance; dietary strategies ~exhausted

SHORT-TERM GOAL: Alleviate symptoms, collect further info - determine if any gut microbiome or gut function aspects could help explain symptoms

Enteric-coated peppermint oil, 5-HTP
Test gut microbiome
(Co-Biome MetaXplore GI)

MEDIUM-TERM GOAL

LONG-TERM GOAL

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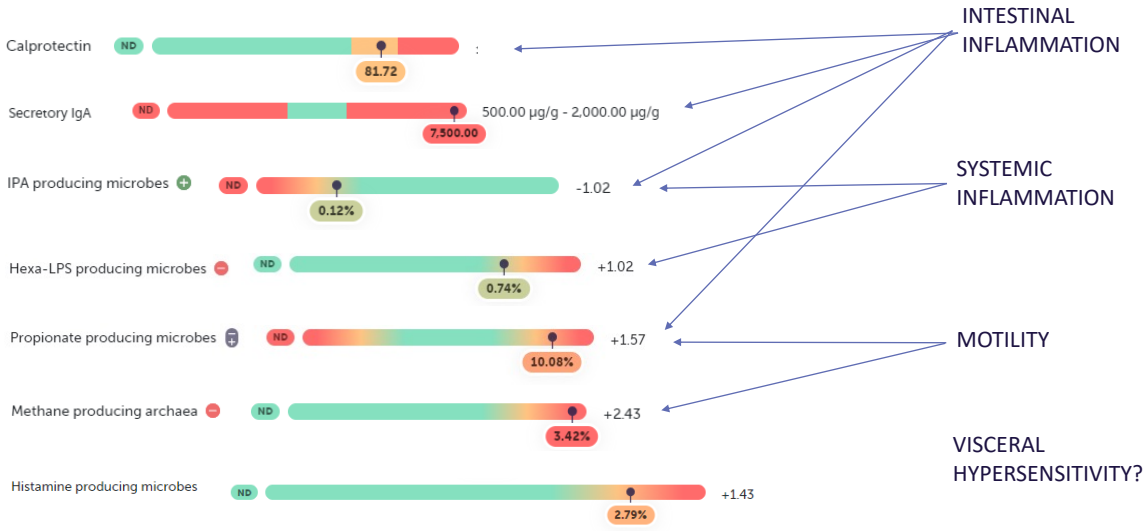
MetaXplore test results



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Species results

Could this suggest reduced upper gut secretory function (gastric acid)?

Oral Species

⊖	Firmicutes	*Streptococcus salivarius*	0.12%	Common	-0.29
○	Firmicutes	*Lactobacillus crispatus*	0.04%	Rare	
⊖	Firmicutes_A	*Peptostreptococcus anaerobius*	0.04%	Less common	-0.53
⊕	Firmicutes	*Lactobacillus_C paracasei*	0.03%	Rare	
○	Firmicutes_A	*Peptoniphilus_A lacrimalis*	0.03%	Less common	-1.08
○	Bacteroidota	*Prevotella bivia*	0.02%	Less common	-1.38

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What is making up her species richness?

Discussion topic

40 rare species.

15 of these are poor degraders of fibre.

6 oral species.

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Assess: Outcome of testing (summary)

Red flags	Gut terrain	Dysbiosis
Nil	Borderline high calprotectin High secretory IgA High oral species	High methane-producers High hexa-LPS producers High histamine producers IPA producers present but low

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Medium-term goal

SHORT-TERM GOAL: Alleviate symptoms, establish tolerance, collect further info	→	Enteric-coated peppermint oil 5-HTP
MEDIUM-TERM GOAL: Reduce gas and bloating by beginning to address gut-related mediators, promote effective bowel emptying	→	***Lactobacillus reuteri* DSM 17938 1/day** **Betaine HCl x 1-2 tds** **Matcha 1 tsp/day** **Curcuma longa 1:1, Punica granatum 1:2** **Defecation dynamics, pelvic floor physio**
LONG-TERM GOAL: Improve microbiome	→	

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Why the herbs?

Mentha x piperita	*Curcuma longa*	*Punica granata*
Systematic review level evidence - ↓pain, wind, bloating in IBS (Ingrosso et al 2022) ↓methane production in vitro/in ruminal fluid (Ozkan et al 2015)	↓ faecal calprotectin (Lang et al 2015)	↑ IPA (Yang et al 2020) ↓ methane production in goats (Shilwant et al 2023)

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Results of re-testing

6 weeks between tests

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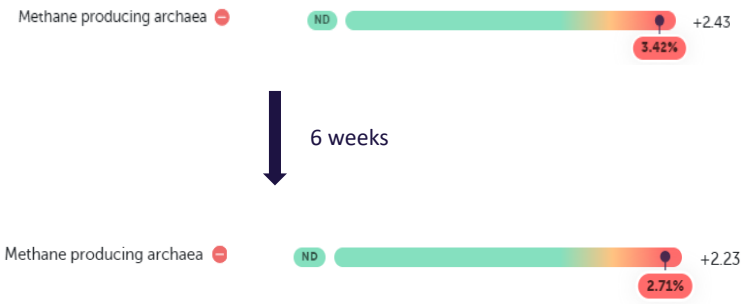
Change in methane



Methane producing archaea

21%

Discussion points

Likely due to *L. reuteri* DSM 16938.

Implications for motility.

Longer treatment period required.

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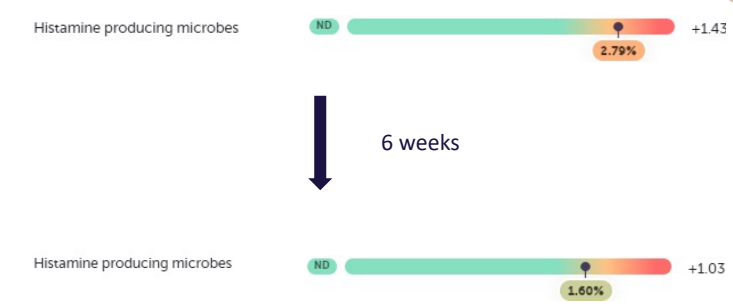
Change in histamine-producing bacteria



Histamine-producing bacteria

93%

Discussion points

Is it possible this could lead to reduced visceral hypersensitivity/ abdominal pain over time?

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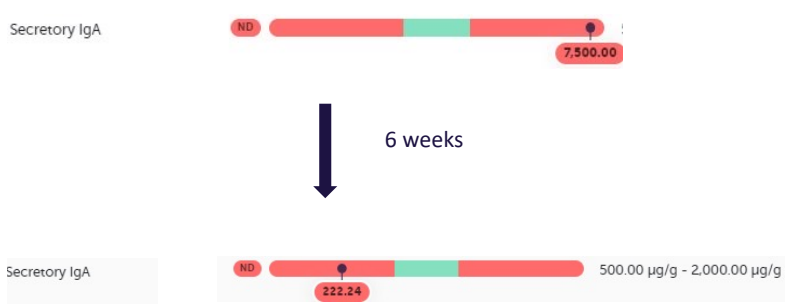
Change in secretory IgA



Secretory IgA

97%

Discussion points

Making headway on inflammation?

Has dropped into lower than optimal range – why?

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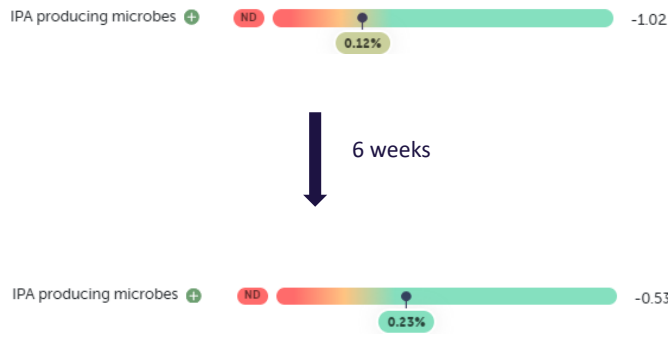
Change in IPA-producing bacteria



Increase in IPA-producing bacteria

92%

Discussion points

Favourable for intestinal inflammation.

Likely due to the pomegranate herb.

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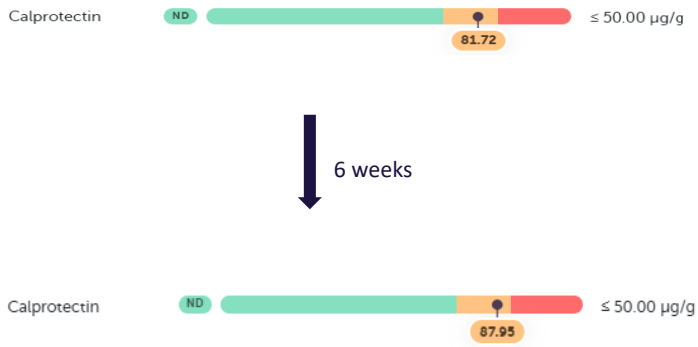
Change in calprotectin



Effectively no change

Discussion point

Suggest persistent inflammation.

Insufficient time?

Turmeric liquid 1:1 inadequate potency?

DDx?

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Change in oral species

−	Firmicutes	*Streptococcus salivarius*	0.12%	Common	-0.29
	Firmicutes	*Lactobacillus crispatus*	0.04%	Rare	
−	Firmicutes_A	*Peptostreptococcus anaerobius*	0.04%	Less common	-0.53
+	Firmicutes	*Lactobacillus_C paracasei*	0.03%	Rare	
	Firmicutes_A	*Peptoniphilus_A lacrimalis*	0.03%	Less common	-1.08
	Bacteroidota	*Prevotella bivia*	0.02%	Less common	-1.38

6 weeks

Streptococcus salivarius	0.09%	

Number of oral species

↓ 5

Discussion topic

Favourable for gut terrain. Likely due to the betaine hydrochloride increasing gastric acidity, reducing survival of oral bacteria in the stomach and distally.

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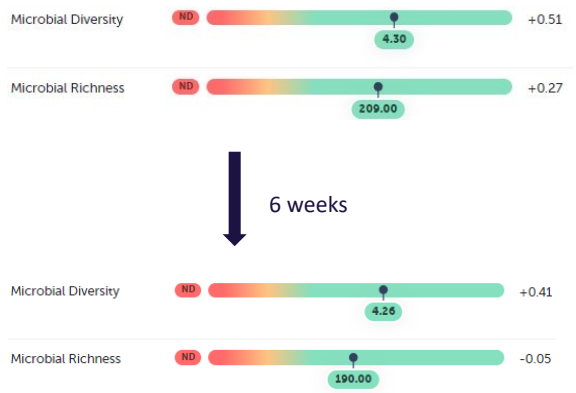
Change in diversity



Richness

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Discussion topic

Remains in healthy range.

Rare species dropped from 40 to 24. Many of these were poor fibre degraders.

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Change in hexa-LPS producing bacteria

Hexa-LPS producing archaea

93%

Discussion topic

Favourable for intestinal and systemic inflammation.

Effect of herbs?

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Long-term goal

SHORT-TERM GOAL: Alleviate symptoms, establish tolerance, collect further info	Enteric-coated peppermint oil 5-HTP
MEDIUM-TERM GOAL: Reduce gas, pain and bloating and promote regular, complete BMs	*Lactobacillus reuteri* DSM 17938 1/day Betaine HCl x 1-2 tds
LONG-TERM GOAL: Continue to address underlying drivers and support microbiome for optimal health	***Passiflora incarnata* 1:2,** ***Glycyrrhiza glabra* 1:1** **Visceral mobilisation, transcutaneous auricular vagal nerve stimulation**

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Adapt: Outcome-based goals and ongoing management plan

Continue to reduce methanogens (may have impact on constipation/slow transit picture with longer treatment)	Continue *L. reuteri* 17938
Continue to support digestion	Continue betaine HCl Later, switch to bitters/ginger
Promote parasympathetic tone	Nervous system support herbs (passionflower, licorice) Transcutaneous auricular vagus nerve stimulation; visceral mobilisation
Slower response to treatment **Consider DDx**	Refer to GP for further screening

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Differential diagnosis considerations

Slow-transit constipation (slow response)	→	Continue reducing methanogens
Outlet dysfunction (rectal distension slows colonic motility) (Law, et al 2002)	→	Ongoing pelvic floor program
Likelihood of cancer? (ovarian or colorectal) Endometriosis	→	GP screen; note high voiding frequency 15/day BUT bloating co-exists with gassiness+

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Results of pelvic ultrasound

The right ovary has a volume of 11ml and contains two corpus luteum cysts measuring up to 19mm. The left ovary has a volume of 7ml. Both ovaries are fixed to their respective adnexae and are tender on probe palpation. Trace volume of fluid in the pouch of Douglas, within physiological limits. No adnexal mass.

CONCLUSION:

Both ovaries are immobile and tender in the adnexae raising the possibility of an adhesive element from occult endometriosis, PID, or adhesions. No other definite cause of the patient's symptoms seen.

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Case 2 key takeaways

1. Favourable microbiome changes can be made even before (or in the absence of) significant change to symptoms

2. Multiple mechanisms can co-exist; perseverance is required in order to target these for a response both clinically and via testing parameters

3. Reduction in diversity is not always a bad thing

4. When progress is slow, consider differential diagnoses such as endometriosis

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Q&A: Case 2

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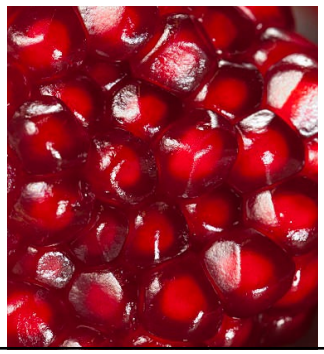
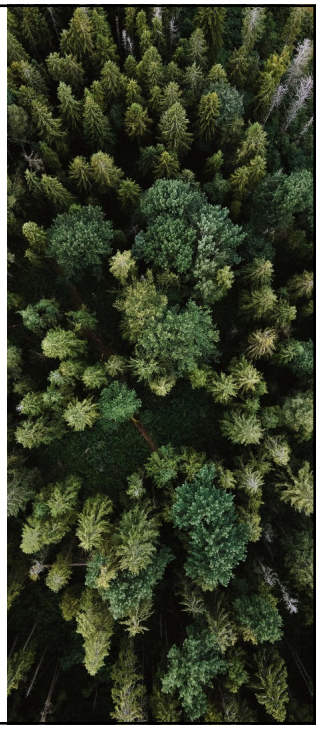
Case 3: Constipation and Bloating

Dr Brad Leech





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Age/Gender: 42/Female

Diagnosed conditions: Fibromyalgia

Case history:
- Bloating after eating grains, beans and legumes
- Inconsistent stool. Movement most days but constipation after eating grains, beans and legumes, sometimes difficult to pass

Medication/supplements: 5-HTP 100mg, tyrosine 200mg, taurine 200mg, B vitamins, vitamin C 1g, Vitamin D 3000IU, calcium 150mg, magnesium 200mg, Co-Q10 100mg, carnitine 500mg

Diet: Modified autoimmune paleo plus eggs, nuts, seeds, chia, ghee, small amounts of sugar

Avoiding: Gluten, dairy, nightshades, grains, beans, legumes

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Patient treatment goals

Short-term	Medium-term	Long-term
Reduce bloating and have normal stool	Increase diet diversity	Improve clinical presentation of fibromyalgia e.g., fatigue, muscle aches, joint stiffness, POTS, anxiety

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MetaXplore test results

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Assess: Outcome of testing

Red flags	Gut terrain	Dysbiosis
No red flags Borderline pancreatic elastase	Low secretory IgA	High methane

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Management

Methane	SIgA	Pancreatic elastase
Prescribed *L. Reuteri* (LR-11) at 10 billion CFU rather than *L. Reuteri* DSM 17938 at 200 million CFU	Prescribed *Bifidobacterium animalis* ssp *lactis* BI-04 and other strains rather than *Bifidobacterium lactis* BB12	Prescribed digestive enzymes with each meal

Amylase enzyme	15000 DU
Protease	50000 HUT
Lipase	1200 LipU
Beta-D-galactosidase (Tilactase)	1500 ALU
Cellulase	300 CU
Ananas comosus (Bromelain)	2400000 PU
Taraxacum officinale (Dandelion) ext. ext. equiv. dry (root)	166 mg 665 mg
Zingiber officinale (Ginger) ext. ext. equiv. dry (rhizome)	42 mg 333 mg

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Gastrointestinal Symptom Rating Scale

Before	After
Reflux: No discomfort at all	**Reflux**: No discomfort at all
Abdominal pain: No discomfort at all	**Abdominal pain**: No discomfort at all
Indigestion: Slight discomfort	**Indigestion**: No discomfort at all
Diarrhoea: Slight discomfort	**Diarrhoea**: No discomfort at all
Constipation: Mild discomfort	**Constipation**: No discomfort at all
GSRS: Slight discomfort	**GSRS**: No discomfort at all

4 months

No | Slight | Mild | Moderate | Moderate severe | Severe | Very Severe

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"The bloating and constipation I was experiencing after eating grains and legumes has gone."

"I tested some of my food sensitivities a few weeks ago. Initially I did not react, but the following week I ate gluten again and had stiff joints within hours."

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Results of re-testing

4 months between tests

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Change in methane

Methane producing archaea ND 1.11% +1.46

	Phylum	Species	Abundance	Prevalence	Distance from Average
	Euryarchaeota	*Methanobrevibacter_A smithii*	1.25%	Common	+0.61
	Euryarchaeota	*Methanosphaera cuniculi*	0.38%	Rare	

4 months

Methane producing archaea ND 0.25% +0.19

	Phylum	Species	Abundance	Prevalence	Distance from Average
	Euryarchaeota	*Methanobrevibacter_A smithii*	0.28%	Common	-0.58
	Euryarchaeota	*Methanosphaera cuniculi*	0.21%	Rare	

Methane producing archaea ↓ 77%

Discussion topic

L. Reuteri (LR-11) is suggested to reduce methane.

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Change in secretory IgA

Secretory IgA increased

216%

Discussion topic

Probiotic containing *Bifidobacterium animalis* ssp *lactis* BI-04 had slight impact; further interventions are required.

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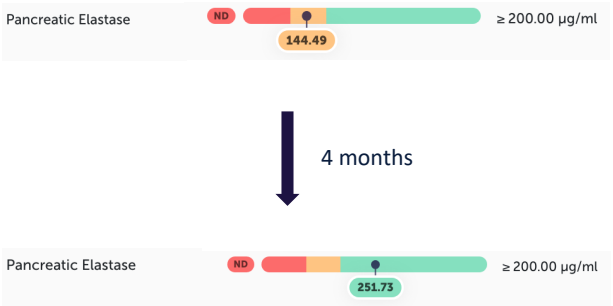
Change in pancreatic elastase



Pancreatic elastase increased

74%

Discussion topic

Digestive enzymes and herbs may support stomach acid and digestion.

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Change in diversity

Increase in microbial richness

13

Discussion topic

Increase in diet diversity, especially the introduction of some brown rice and lentils. Also added kefir into diet.

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Change in calprotectin

Calprotectin increased

Discussion topic

With improvement of symptoms, reported vaping.

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Assess: Outcome of testing

Red flags	Gut terrain	Dysbiosis
Calprotectin increased	Secretory IgA still low	N/A

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Clinical outcome and ongoing management plan

Low secretory IgA	Switch probiotic to *Bifidobacterium lactis* BB12 Add 4g of GOS daily for 3 months Add *Saccharomyces boulardii*
Borderline calprotectin	Avoid nicotine No need for referral or supplements
Normal range methane	Stop probiotic Slowly increase beans and lentils

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Case 3 key takeaways

1. Clinical symptoms improved with a change in microbial markers most likely methane
2. Microbial diversity increased alongside diet diversity
3. Measuring at 4 months directed where further treatment is required
4. Re-testing the microbiome encouraged the patient to stop vaping

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Q&A: Case 3

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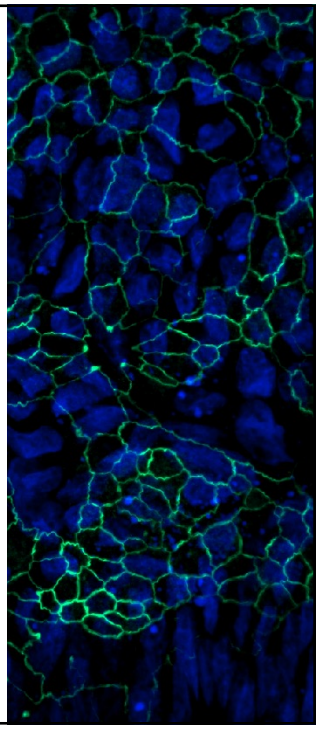
Case 4: Ankylosing Spondylitis without GI symptoms

Alyssa Tait



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Age: 37 **Gender:** Male

Diagnosed conditions: Ankylosing spondylitis, HLA B27+ve, uveitis (episodic flares) accompanied by diarrhoea (episodic); no baseline GI symptoms.

Case history: 1st episode uveitis and joint pain in 2016

Medication/supplements: previously meloxicam (NSAID), now nil

Diet: Mixed diet. Late breakfast, CHO-dominant (oats/WeetBix, banana or peanut butter/banana toastie); Lunch and Dinner: stir fries (Basmati rice), protein and veg. Low seafood (1x fortnight), low whole grains

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Patient treatment goals

Short-term	Medium-term	Long-term
Evaluate opportunities for gut microbiome/gut function to reduce frequency and severity of uveitis/joint pain episodes	Develop program to encourage long-term adherence	Minimise frequency and severity of uveitis and joint pain episodes, prevent need for immunosuppressant medication

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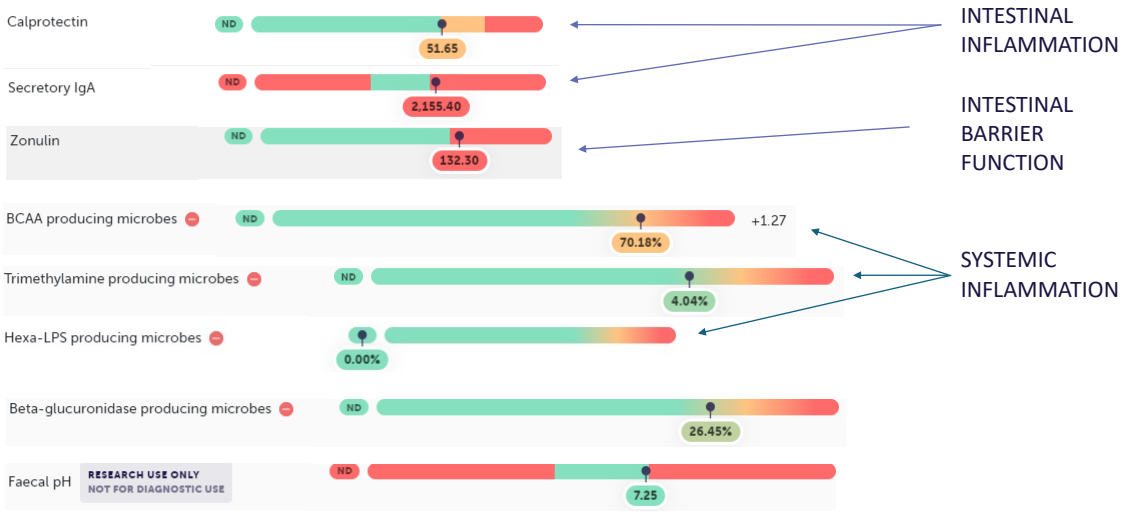
MetaXplore test results



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No detectable *Bifidobacteria*

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Assess: Outcome of testing

Red flags	Gut terrain	Dysbiosis
No red flags (calprotectin borderline)	High zonulin High secretory IgA Borderline high faecal pH	Borderline high BCAA Borderline high beta-glucuronidase Borderline high TMA

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Goal-directed treatment strategies

Reduce intestinal inflammation	Support gut barrier integrity	Control systemic inflammation	Gut terrain
Swap bread to 100% rye Inulin (1tsp->1tb/day) Blue polyphenol powder (1tsp->1tb)*	Glutamine (4g->16g/day) Zinc carnosine (=34mg Zn)+HMOs	550mg/day EPA+DHA*	Inulin to ↓ faecal pH

N.B. Fish oil was supposed to be double this and blue powder 25% of this!

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Apply: Patient management plan

Dietary prescription	Specific prebiotic prescription	Personalised supplement recommendations	Patient education
Swap bread to 100% rye to ↓BCAA-producing microbes (Lankinen et al 2009)	Inulin to ↓faecal calprotectin and ↓beta-glucuronidase activity (Valcheva, et al 2018; Slavin & Feirtag, 2010)	Matcha and concentrated blueberry powder to ↓faecal calprotectin (Dryden, et al, 2013; Biedermann, et al, 2013) Marine omega-3s to ↓faecal calprotectin (Scaioli, et al 2018) Glutamine to ↓intestinal permeability (Zhou, et al 2019)	Intestinal permeability (↑zonulin) precedes arthritis (rat model) (Hecquet, et al 2023) ↑calprotectin – possible enthesitis, ongoing and current symptoms (Kang, et al 2020) Calprotectin predicts disease activity in AS and risk of developing Crohn's disease (Klingberg, et al 2017)

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Results of re-testing

5 weeks between tests

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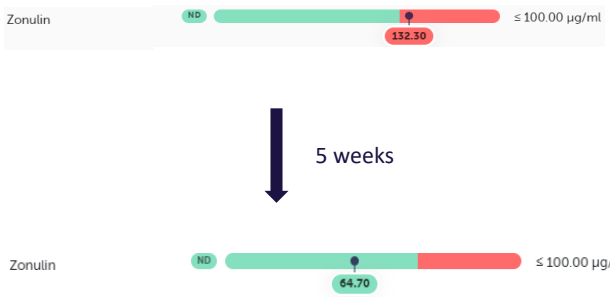
Change in markers of barrier function: Zonulin



Zonulin

51%

Discussion point

Glutamine and zinc carnosine combination effective even in a short period of time.

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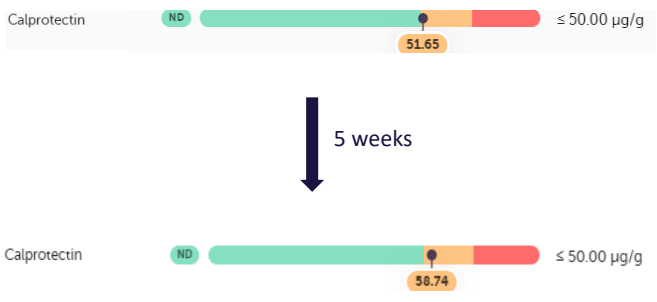
Change in markers of intestinal inflammation: Calprotectin



Effectively no change

Discussion point

Insufficient time?

Intercurrent influenza A infection?

Omega 3s too low and discontinued matcha – would this have made the difference?

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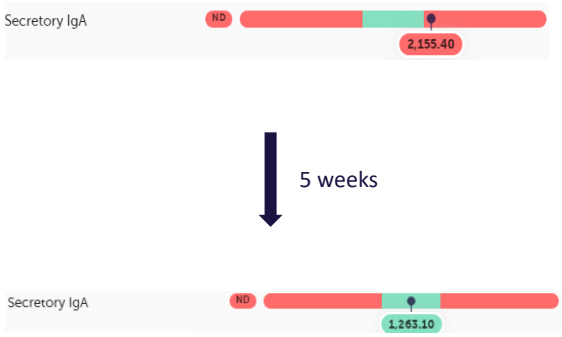
Changes in markers intestinal inflammation: Secretory IgA



Secretory IgA normalised

Discussion point

Lack of good evidence on what reduces excessively high sIgA, but suggests some benefit of combined approach on normalising mucosal immune response.

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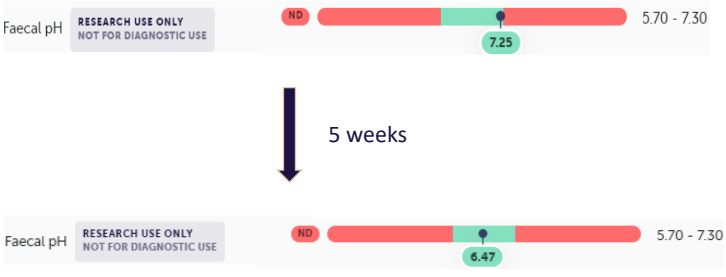
Changes in markers of gut terrain: Faecal pH



↓ faecal pH

Discussion point

Effect of inulin?

Intercurrent influenza A with rapid transit?

Of likely benefit in butyrate production and absorption.

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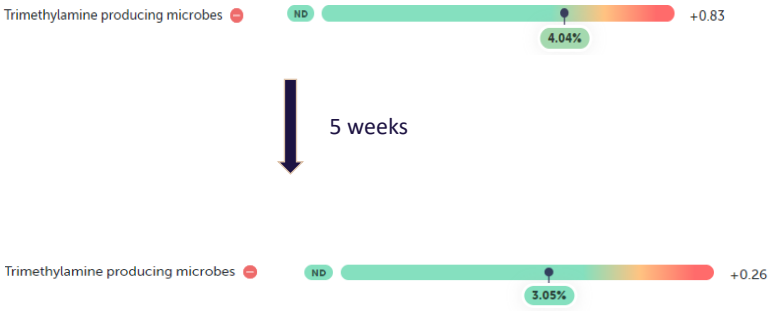
Changes in markers of gut dysbiosis: TMA microbes



↓ TMA-producing microbes

Discussion point

Combination of inulin and polyphenols favoured health-promoting rather than TMA-producing species.

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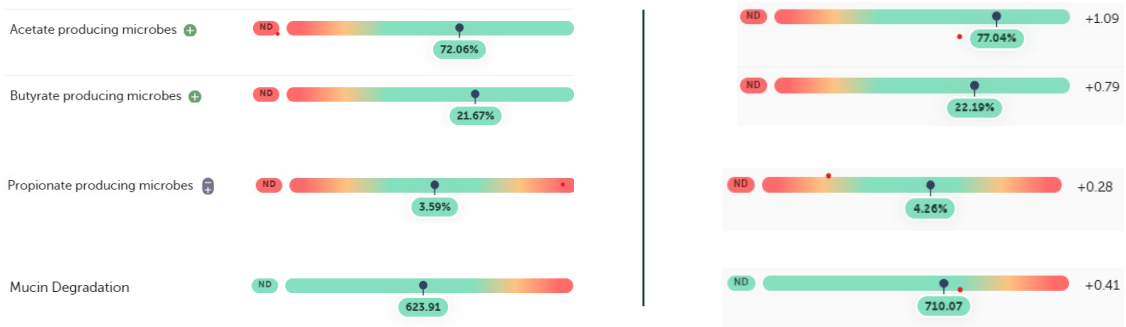
Impact on short-chain fatty acids



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Clinical outcome and ongoing management plan

Continue to work on reducing inflammation (aim for calprotectin <50)	↑dose of inulin to 2tb (10g) ↑omega 3 dosage; continue blue polyphenols Re-test 3-6 months when well
Continue to promote good intestinal barrier function	a/a; continue glutamine for 6/12 due to typical timeframe between uveitis flares; continue 100% rye to promote butyrate
Further testing and maintain/strengthen therapeutic relationship	Plasma zinc; serum vitamin D; maintain contact

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Case 4 key takeaways

1. **Dysbiosis (and health risk factors) can occur in the absence of specific GI symptoms**
2. **Gut microbiome testing can guide risk-reduction approach effectively, and re-testing can help evaluate effect of management**
3. **Gut terrain can be improved even over the short term (as demonstrated by changes in zonulin, secretory IgA, faecal pH)**
4. **Prebiotics and polyphenols can reduce dysbiosis (TMA-, SCFA-producing species)**
5. **Simple interventions can improve intestinal barrier function**

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Q&A: Case 4

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Key highlights

- Assessing a patient's gut microbiome and gastrointestinal health should be a consideration for many of your patients
- Gut imbalances such as functional dysbiosis may present with no direct gastrointestinal symptoms
- Understanding your patient's unique microbiome can help direct a personalised dietary, prebiotic and supplement prescription to shift their microbial and GI health markers
- Using Co-Biome's MetaXplore™ range of tests combined with your clinical expertise can support informed improved patient outcomes
- Re-testing the microbiome between 3-6 months is optimal

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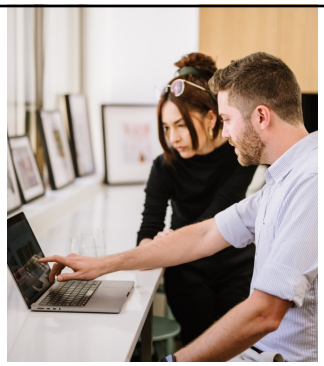

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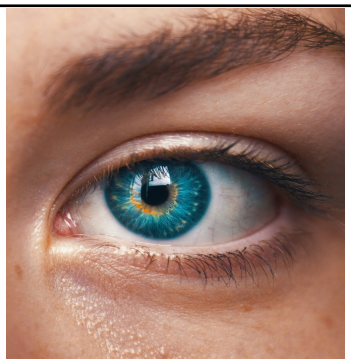
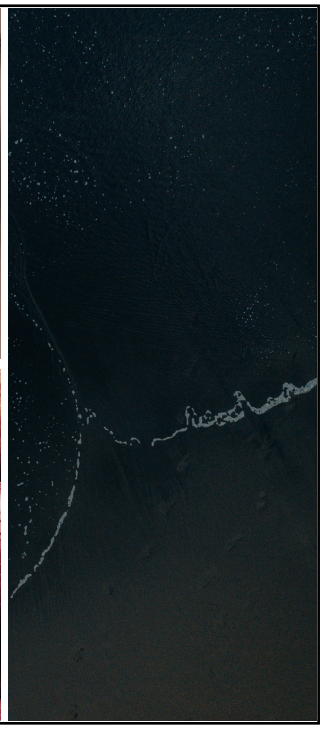
Questions?

Hayley Parcell
Dr Brad Leech
Alyssa Tait





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The MetaXplore™ range

MetaXplore™
Provides a metagenomic driven gut microbiome profile, together with the latest research insights for healthcare professionals.
Technology: metagenomics

$369

MetaXplore™ GI
Provides the same comprehensive microbiome profile as MetaXplore™ plus reports on seven gastrointestinal health markers and science backed clinical insights to assist clinical decision-making and intervention.
Technology: metagenomics + diagnostic GI health markers + faecal pH

$489

MetaXplore™ GI Plus
Co-Biome's most comprehensive functional gut microbiome profile. It provides all the features found in MetaXplore™ and MetaXplore™ GI, plus targeted pathogen panels.
Technology: metagenomics + diagnostic GI health markers + faecal pH + RT-PCR

$529

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When would you consider using gut microbiome and gastrointestinal testing?

Gastrointestinal disorder

- IBS
- Constipation
- IBD
- Abdominal pain
- Diverticular disease
- Non-infectious diarrhoea
- Intestinal methanogen overgrowth
- Pathogen infection - loose stools, frequent defecation, weight loss, bloating, abdominal pain, nausea, vomiting

Non-gastrointestinal disorder

- PCOS
- Hormonal imbalance
- Recurrent kidney stones
- Autoimmunity
- Chronic inflammation
- Metabolic disease
- Obesity and weight loss
- Oxalate processing
- Chemical sensitivities

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Thank you for attending

Visit the Co-Education Hub All Resources page for additional resources and to watch the webinar replay. You can access this via your Practitioner Portal.

Register as a Co-Biome Clinician today for microbiome educational resources at your fingertips!

Additional resources:

- *New* Prebiotic Guide
- Low FOMAP Prebiotic Guide
- Dietary Impacts on the Gut Microbiome Guide
- Pathogen and Pathobiont Management Guide
- Interpretation Guide
- MetaXplore Range Report Interpretation Checklist
- Patient Referral Letter Template
- Testing Your Microbiome Patient Brochure
- Patient Handouts – Ellagic acid; Arabinoxylan; Beta-glucan; Inulin; FOS; GOS; Pectin; Resistant starch

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