

Microbiome analysis for personalised nutrition

Additional participant questions

Q: What would you consider a protein intake which is too high to disrupt the gut microbiome?

A: At Microba we use the Nutrient Reference Values Suggested Dietary Targets to assess fibre and protein consumption in adults (Fibre > 28g for women and > 38g for men; Protein: 15-25% energy). (Often a person's protein intake may not be excessive, however their fibre intake is quite low, thus the gut microbiome becomes geared towards processing protein over fibre. It is important to make sure a person is actually taking in excessive protein before recommending a reduction in protein intake.

Q: Is the average a benchmark? That is if you are high you should try to rebalance?

A: Average is always best, but for specific metabolites and species, either high or low levels may also be good. For example, having a high potential to produce metabolites associated with health such as butyrate, propionate or IPA would be considered good. And having a low potential to produce metabolites associated with disease such as trimethylamine, LPS, and B. fragilis toxin would also be considered good. In our report, you can click on the name of each metabolite for a description of what that metabolite does and learn if high or low levels should be of concern or not.

For species, it is more difficult. This is because everyone's microbiome is unique, and each person will have many species that are unique to them. This will make it appear that they have high levels of a species, when in fact, it just means the species was not detected in the healthy comparison group because it happens to be an uncommon species. Also, a person may not have many of the well-studied species detected in them, and this is also fine, it just means they likely have other species performing the same role that are not as well studied. This is why it is also useful to look at the potential of a person's microbiome to produce different metabolites, as this will address the role of all the species in the gut microbiome, whether or not they are well-studied.

Q: What do you recommend to people that get terrible bloating/wind after increasing their fibre intake?

A: It is best not to drastically increase fibre intake all at once, but rather gradually introduce more fibre over time to allow time for the gut microbiome to adjust. For people who suffer from IBS like symptoms after consuming certain types of fibre we recommend that they consult an Accredited Practising Dietitian with experience in managing food intolerances who will be able to assist them to perform appropriate exclusion and challenge protocols while maintaining fibre intake using well tolerated prebiotic fibres.

Q: I have a patient who has done the test. She has high diversity but is only 25% comparable to the healthy group. Is the latter a concern?

A: Not necessarily. The 25% number only means her microbiome is different to our healthy comparison group. At this point, a low percentage should not be cause for concern if she also has a high microbial diversity, good balance of fibre and protein degrading microbes, no pathogenic species detected, and her potential to produce different metabolites doesn't show anything unusual. Everyone's microbiome is unique, and many people will have species that are unique only to them. The healthy group in the current release of the report only consists of 42 people (the next release will have over 80 people); thus this is currently too small to capture the diversity of potentially healthy microbiomes that are possible. If your patient has a high number of uncommon species, then this would make her profile less comparable to the healthy group.

Q: If we order a test for a client - are we able to also have access to the client's online information, i.e. this would help to prepare for their review.

A: Currently, practitioners only have access to their patient's downloadable report, which is a summary of the patient's results. We are planning to build a separate healthcare practitioner web portal in the future where the practitioner will be able to view a patient's metadata and the online version of their report.

Q: Thanks for providing the costs. Is there a rebate available through medicare or health insurance?

A: As detailed during the webinar the initial test cost \$349 while subsequent tests cost \$299. Currently there is no rebate available for our test. We are working to develop a diagnostic version of our test that may be eligible for Medicare and health insurance rebates in the future.

Q: I'd be interested to hear what the client profile is like.. are they people with established disease, or people with undiagnosed symptoms, or healthy curious people... etc?

A: Our customers are very diverse. We have had people that fit all of the categories you describe.

Q: Can you please guide me on bacteria specially leading to increase in weight & what species of probiotic to prescribe for fat loss

A: Gut microbiome research is still in its early days and cause and effect for gut microbes (apart from pathogens) is yet to be determined. Some species have been associated with obesity and other metabolic disorders, but it is not known if they cause the disorder or are just a consequence of the disorder.

We do not recommend probiotics to our customers, as the clinical efficacy of probiotics is limited to specific strains for specific diseases. Our report is intended for informational purposes only and thus we do not make recommendations for people with specific diseases. For metabolic disorders such as obesity, the best studied bacterial species that has been associated with a healthy metabolic status and leanness is a species called *Akkermansia muciniphila*. However, the safety of this organism as a probiotic has not been proven yet and it is not commercially available.

Q: Which brand of fibre supplement is best if a supplement is required

A: We do not recommend fibre supplements because they are not equivalent to consuming fibre containing whole foods such as whole grain cereals, fruits and vegetables. Due to the processing required to produce fibre supplements they become much more readily fermentable which means they may not reach more distal regions of the large intestine.. An animal studied observed little difference in the gut microbial communities of mice fed a fibre free vs a prebiotic supplemented diet, whereas there was a large difference in mice fed a fibre rich diet of whole grains (Desai et al. 2016). Additionally, the phytochemicals bound to fibre in whole plant foods are also important in mediating the health benefits of whole plant foods, which supplements do not provide. This is also the reason why we do not recommend consuming a majority of your fruit and vegetable consumption as juices or smoothies, as the disruption of cell walls will prevent some phytochemicals from being delivered to the large intestine.

Q: What treatments would you propose for elevated pathogens?

A: Our test is not medically diagnostic and is intended for informational purposes only; we do not provide treatment advice, only dietary suggestions. If our test detects high levels of pathogens and the person is experiencing gastro symptoms, we always recommend the person see a GP or gastroenterologist to have diagnostic tests carried out.