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GUT BACTERIA AND IMMUNE TOLERANCE

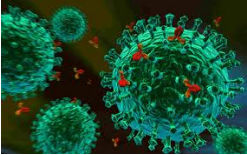


Healthy Gut

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The Immune System

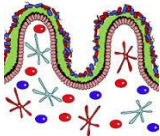
- It has been known that the gut bacteria has immune tolerance
- This means that the immune system does not see it as foreign
- It was assumed previously that the immune system just "ignored" the gut bacteria
- Now the perspective has changed



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Immune System

- The good bacteria actively participates in maintaining the immune intestinal balance
- It does this by interacting with the intestinal epithelial tissue
- They also deliver the signals of "tolerance" to the underlying immune system
- They do this by interacting with receptor sites on intestinal wall lining that are involved with regulating inflammation



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Immune Reaction

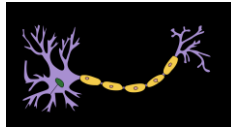
- Allergy and autoimmunity require an inflammatory response and the reactions cannot occur without it
- Gut bacteria influences the immune response
- You can look at it that the gut bacteria is telling the immune system to not react
- But this is just one aspect



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Dendrites

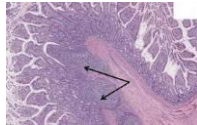
- Dendrite cells (involved in nerve cell communication) also communicate and have direct access to gut bacteria
- They play a key role in keeping the tight junctions between intestinal wall lining cells closed (preventing leaky gut)
- This also plays a role in preventing allergic and autoimmune reactions and inflammation
- Gut bacteria activate dendrites
- Dendrites are directly involved in activating the t-reg cells that are key to immune tolerance



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GALT

- GALT (Gut-Associated Lymphoid Tissue)
- Gut bacteria and GALT live in a reciprocal relationship
- Gut bacteria is essential for the protein and the nutrients that GALT needs
- Gut bacteria are a major source of natural antigens that stimulate the GALT and induce mucosal immune tolerance for food and other non-pathogenic substances
- T-reg cells are generated in the GALT



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Probiotic Strains

- Studies have revealed that numerous benefits from specific good bacteria strains include regulating inflammation
- Lactobacillus strains have been shown to decrease inflammation and increase production of IL-10 – an anti-inflammatory cytokine connected to maintaining immune tolerance
- B. fragilis is another strain that has had a positive effect with IL-10
- Certain strains of filamentous bacteria (which are a unique type of bacteria that may be related to Clostridium) increases Th17 cells which is associated with increased autoimmunity – good bacteria can regulate this function

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Strains

- Probiotics strains do not have to colonize to talk to the immune system
- There has been an assumption probiotics must attach to the intestinal wall lining and re-produce to be effective but we know now that they do not have to nor do they
- Studies show that as transient bacteria – they interact with the immune system and lower inflammation while they are there but they are gone shortly after ingestion stops (up to two weeks)
- Some evidence that dendrite cells extend into the intestines to interact with transient strains and may even carry the strains across the epithelial layer for further use in the body

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Strains

- These Strains: *Bifidobacterium longum*, *Bifidobacterium infantis*, *Bifidobacterium breve*, *Lactobacillus rhamnosus* GG, *Lactobacillus acidophilus*, *Lactobacillus casei*, *Lactobacillus delbrueckii subsp. bulgaricus*, *Lactobacillus plantarum*, and *Streptococcus salivarius subsp. Thermophilus* along with those mentioned previously help regulate inflammation response and play a role in maintaining immune tolerance
- More strains are now being studied to help limit inflammation and restore tolerance

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In Summary...

- Whether it is a case of allergy or autoimmunity, the goal is to restore immune tolerance
- More research is needed to do this specifically but in the meantime, there are many things to that you can recommend to a client so they can begin working on this
- It takes time to heal so the strategy needs to be livable as this will probably take years depending on the person and how severe the circumstance



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Where To Start...

- A protocol is going to be a combination of
- Limiting inflammation as much as possible
- Healing the intestinal wall lining
- Building up residential bacteria numbers
- Increasing overall numbers of good bacteria through probiotics and fermented foods



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Where To Start...

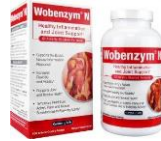
- Removal of foods should be considered if they cause a lot of inflammation in the short term – they can be used as a test to see if progress is being made
- Be careful removing foods – this can make the difference with a client sticking to a protocol or falling off
- Probiotics and fermented foods are going to be used to add numbers
- We do not know how much a person can re-build their own residential numbers



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Where To Start...

- Favour probiotics that have been shown to have anti-inflammatory benefits
- We will talk more about both probiotics supplements, fermented foods and strategies for re-building gut health in Module 3 and 4
- Digestive enzymes can be used to help limit food reactions
- Protease enzymes (Wobenzym) can be used for inflammation between meals



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Working With Clients

- This where you need to be very individualized with each client
- We do not know the true difference in the microbiome between one client and another
- Removing known allergens is a sound strategy in the short term as gut health is worked on
- However, removing food sensitivities is where you have some discretion – a good Candidiasis protocol can remove many food sensitivities
- Seeing the effects of the probiotics and fermented foods can also help you make usable suggestion for clients



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Working With Clients



- You goal as a practitioner is to find means and methods that works with the client
- Do not get hung up on what you think they should be doing – give them options and let them choose.
- Our long term goals should always be to help them develop their natural intuition and to listen to their body
- It would be great if there was a black and white protocol that works for everyone but there isn't – mainly because of gut bacteria differences – however there is plenty we can do to help