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THE HEALTHY GUT
FOR AGING WELL




Healthy Gut

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Aging

- A focus on health and aging always produces the same statement

"Things just do not work as well when we are older"
The question is why?
If we were a car – replace the parts and the car can live forever
We can't replace our parts
But car parts can't regenerate themselves but our cells replace themselves all the time



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Aging

- This means the potential to function well is available in theory
- There are many theories to aging:
 - Free radical damage
 - Wear and tear
 - Toxicity
 - Inability of telomeres to be maintained
 - Insufficient nutrients
 - Lack of movement
 - Stress
 - Inflammation

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Wear and Tear


- This is the weakest of all the theories
- With body parts that can replace themselves – it implies we should not wear out
- So the question is why would we wear out?
- Nutrients and lack of them?
- Lack of exercise (use it or lose it)?
- Too many stressors?
- Inability of the body to regulate itself for some reason?
- Chemicals, pollution and drugs that damage us?



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The Role of Inflammation

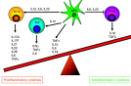
- Chronic, low grade inflammation is considered a major factor in aging
- Blood tests reveal inflammatory markers in connection to all conditions of aging – heart disease, cancer, diabetes Alzheimer's, arthritis, osteoporosis, dementia, etc.
- The exact connection is not fully understood
- One theory – immune products, leukocytes, cytokines cause damage to tissue including healthy cells



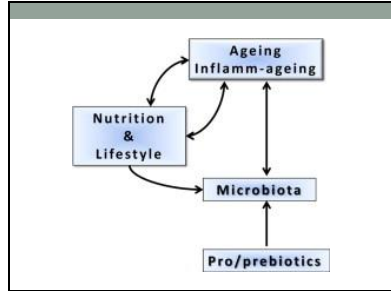
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Inflammation

- IL-6 and TNF-Alpha can down regulate insulin, and hormones connected regulating to HBP
- Another theory suggests damaged cells and cellular debris accumulate with age
- This would include free radicals and cells damaged by free radicals, amyloid plaque, AGEs and these cause the damage which produces a chronic inflammatory response
- It is hard to have a conversation about inflammation without discussing the role of the gut bacteria




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Inflammation and Gut Bacteria

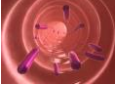
- We already know that gut bacteria regulates inflammation in the body
- Numerous strains are anti-inflammatory such as include *L. ramosus* GG, *L. breve*, *L. casei*, *L. plantarum*, *Streptococcus thermophilus*
- Short chain fatty acids (SCFA) such as butyrate promote t-reg cells which in turn, promote IL-10 the anti-inflammatory cytokine



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Dysbiosis


- Bad bacteria produces endotoxins (like LPS) which trigger inflammatory responses
- They lock onto gut lining receptors and can trigger an inflammatory response
- Endotoxins also enter the blood stream through leaky gut and trigger responses the production of inflammatory cytokines (IL-6, TNF Alpha etc) which damage tissues in organs such as the liver and the brain



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Gut Bacteria and Aging

- We know that gut bacteria changes as we age
- Older people are more likely to suffer from dysbiosis than younger people (without other factors present)
- Partly because of age factor
- Partly because elderly are prescribed antibiotics more than younger adults
- A study looking at 187 elderly people prescribed antibiotics found that that were alterations to their microbiota and concluded that this affects long-term health



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- In a recent research article:
- *"the gut ecosystem shows the potential to become a promising target for strategies able to contribute to the health status of older people. In this context, the consumption of pro/prebiotics may be useful in both prevention and treatment of age-related pathophysiological conditions"*


Biagi et al, Pharmacological Research Volume 69, Issue 1, March 2013

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Chicken or Egg?


- Bacteroides and Firmacutes are prevalent in adults and the elderly at about the same levels
- What changes is the types of bacteria more E coli (proteobacteria), Staphylococcus (firmicute) and less Bifidobacteria (actinobacteria)
- Reasons suggested:
 - Lower salivary function
 - Neuron degeneration affecting gut function
 - Less gut motility
 - Leads to constipation and decrease in good and increase in bad bacteria

Or



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- The decrease in bifidobacteria is essential for regulating function within the body:
 - Helps maintain gut-brain function
 - Produces SCFA which maintain gut motility and intestinal function
 - Prevents constipation
 - Increases immune function



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Whatever the case


- It means we have to support all the systems as we age to keep our good gut bacteria levels
- Or we have to have to maintain our good gut bacteria levels (or improve them) in order to maintain the function of our systems



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Chicken or Egg

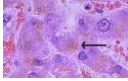
- Same is true for inflammation
- One study of centenarians found increased production of IL-6 and IL-8 inflammatory cytokines which increase proteobacteria such as E coli
- Lower T cell activity was also found
- But is this because there is already lower bifidobacteria and SCFA that is allowing the higher levels of IL-6 or IL8?



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Research


- Research into probiotics and aging found that *L. gasseri* helps extend aging in certain types of worms – by protecting against oxidative stress and stimulating immune response
- Also inhibited lipofuscin (yellow-brown pigment cells aka liver spots) found in the liver, kidney, heart muscle, retina, adrenals, nerve cells, ganglion cells and the brain
- Improved mitochondrial function and improved expression of stress resistance genes.



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Chicken/Egg Key Areas of Focus


- All of these systems have a bidirectional relationship with each other
- Adrenals
- Thyroid
- Brain/ CNS
- Liver
- Digestive function
- Your goal is working on these areas simultaneously with the client



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Adrenals


- Stress depletes good gut bacteria, encourages the growth of bad and increases gut lining permeability
- Is an adult life of stress a factor in change of gut bacteria?
- Or does poor diet and lifestyle affect gut health that in turn affects the adrenals – causing the resulting stress on the body
- HPA axis is one of bi-directional networks involved in the brain-gut connection (immune, CNS.)
- Animal models show poor reactions to stress when good gut bacteria is low and more stimulation of the HPA axis



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Strategy

- Lower stress and support the adrenals
- Help the liver
- Support the thyroid
- Exercise
- Consume probiotics and fermented foods
- Consume prebiotics
- Supplements for gut health
glutamine, butyrate, aloe vera etc



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And Finally...

- As gut health knowledge increases – more products for the gut will be directed at issues of aging
- We have strategies now that we can use for gut health and to support other systems
- The key is the client – what can you get them to do
- It has got to be a way of life, not a protocol
- Explaining gut health in terms of aging may provide the currency the clients need to make changes and find what works for them