

Dear Dr Gunatillake,

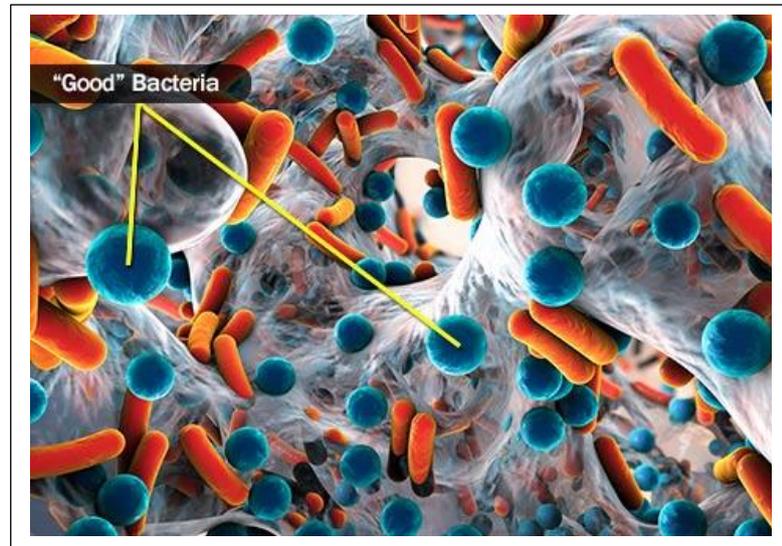
Recently, while at the University of Hawaii, I came across an article by a surgeon Dr. Steve Gundry of the Loma Linda medical school in California, who suggests that BUTYRATE is the key to repairing damaged gut lining which seems to be the main reason for lowered immunity. I wonder whether it might be worth your while to look at this aspect and let us know if it is the case, and if not how else we can look after the gut and hence raise the potency of our IMMUNE SYSTEMS.

With best wishes,

Dr. Hemal Jayasuriya Ph. D.

How do you keep your large bowel free of chronic diseases?

By Dr. Harold Gunatillake-
Health writer.



In our gastrointestinal tract- large bowel accounts for most of the chronic disabling inflammatory diseases like Nonspecific colitis, Crohn's disease, ulcerative colitis, irritable bowel syndrome, multiple polyps, including cancerous growths.

There are trillions of healthy ultra-microscopic germs in your gut called microbes. They include bacteria, Bacteroides, viruses, fungi and so on. All these symbiotic inhabitants (boarders), in your large bowel, are grouped together as 'Microbiota'.

For the mutual co-existence of the host and the lodgers, the latter plays an important role, such as producing vitamins and other nutrients, boosting immune system, connecting through wires with the brain to ensure good functioning of both organs. By the way, your gut is referred to as the second brain.

To keep these microbes healthy, you need to take probiotic supplements such as yogurt, pickled foods, kimchi, miso soup, kombucha, and other fermented supplementary foods, plus prebiotics such as the soluble dietary fibre and resistant starches veggies like Jerusalem artichoke, garlic, leeks onions, among others.

The prebiotics are the main diet of these microbes. They are digested through a process of fermentation, and they seem to generate short-

chain fatty acids (SCFA) that are beneficial for metabolic and cardiovascular health.

SCFA have a range of beneficial effects locally in the gut mucosa (inner lining), and improved metabolic regulations and have a direct and indirect effects on cardiovascular risks and many other conditions about to be mentioned.

The most important metabolites these bacteria produce is the short-chain *Butyrate, acetate, and propionate*.

Butyrate in particular has been the focus of research due to its potent immune-regulating effects. It inhibits the pro-inflammatory cytokines and nitric acid production.

Butyrate molecule has been shown in studies on mice that oral butyrate inhibits cytokine production in peritoneal macrophages, provide protection from atherosclerosis (thickening of arteries), prevents diet induced obesity and increases insulin sensitivity and mitochondrial function.

These studies confirm the benefits of taking butyrate supplements for specific and nonspecific large bowel diseases, control obesity and reduce insulin resistance in diabetes.

Such bacteria producing butyrate and other metabolites is referred to as the gram positive anaerobic firmicutes, some others related are *EU bacterium rectale/Roseburia spp. and Faecal bacterium prausnitzii*. They produce butyrate and others by a process of fermentation. They also produce lactate, formate, hydrogen and carbon dioxide beneficial to gut health.

Diet provides the main energy source (probiotics and prebiotics) for these microbes to thrive. Resistant starch from cooked rice with some oil added and kept in the fridge overnight and consumed the next day or two, provide 'happy food' for these bacteria to ferment and obtain energy. In return, they produce butyrate which have its multiple benefits: one important benefit is that they keep the large bowel inner lining healthy, preventing any of the chronic diseases mentioned before.

I need to reiterate that diet containing high levels of carbs, being the staple food of Asians, mainly as cooked resistant rice leads to higher levels of bacterial fermentation in the colon which results and promoting butyrate formation.

This accounts for Asians having lesser risk of the chronic non-communicable diseases of the large gut, compared to the people who consume a Western diet containing processed meat and white bread.

Butyrate producing bacteria represents a functional group, playing a key role in maintaining regulator of gene expression, inflammation, bacterial energy metabolism,

Beneficial microbes do cause problems

They also create detrimental effects on the cardiovascular disease risk and metabolic health, while producing the beneficial effects, mainly through your food choices.

These bacteria produce a metabolite called trimethylamine (TMA). This is produced when the gut bacteria digest choline, lecithin and carnitine that are abundant in animal products such as red meat and liver, other animal products including eggs and fish.

TMA travels through your blood stream to the liver where it is oxidised to Trimethylamine-oxide TMAO has a detrimental effect on cardiovascular and other organs.

Taking antibiotics by mouth promotes the growth of these bacteria producing this deadly metabolite.

This metabolite also causes inflammatory processes in your large bowel.

It is a known fact that saturated fat in red meat is linked to an increased risk of heart disease. Today, research has shown that picture has gotten more complicated due to these metabolites.

According to a news article published June 11 in JAMA, three recent analysis have linked high blood levels of TMAO being linked to higher risk of both cardiovascular disease and early death.

Other studies have shown that there is a link between high TMAO levels and heart failure and chronic kidney disease. The more, red meat you eat your gut produces more meat-eating bacteria. Eating red meat changes the gut flora, or in other words the gut microbiota.

When cardiac patients are admitted to the casualty in addition to doing an enzyme called troponin test for heart muscle damage, a TMAO blood levels may be important to assess the prognosis.

Vegetarians will be happy to note these findings, and the less we eat red meat is better for our health and longevity.

Bottomline:

It is important that you need to eat a variety of foods, predominantly plant-based and high in fruit and veggies, whole grains and eat poultry, eggs, red meat or processed meat less frequently.

Taking oral butyrate supplements will benefit to improve insulin sensitivity among diabetes, for reduction in obesity, reduce atherosclerotic diseases including cardio vascular episodes and mostly to reduce the risk of large bowel issues.

Hope this article was useful.

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