

THE HEALTH NUGGET



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Gorgeous on the Inside

What I'm about to tell you may not initially sound very gorgeous. From the tip of the tongue to the tail end, you are a living bacterial haven. Literally, some 100 trillion micro-organisms harbor in the depths of the gastrointestinal tract. There are 10 times more micro-organisms than cells in your human body! This colony consists largely of bacteria, with an estimate of over 400 species to boot. Yuck? How about beautiful?

A delicate balance exists between what is considered beneficial, or at least harmless bacteria and the injurious. While 'bad' bacteria can cause disease and unpleasant side effects, we live in a symbiotic relationship with the rest. The harmony that exists in a state of health is beautiful until the balance is upset. When we are healthy, it is in a large part because they are healthy. As a general population, this microbial world is referred to as our intestinal flora.

Born completely sterile, our internal world changes drastically as soon as exposure to the elements and mother's milk occurs. Beneficial bacteria are conveyed to the baby in this way. Interestingly, infants who are nursed carry different strains of bacteria than those who are formula fed.

One thing is certain, no one ever dines alone. What enters the mouth feeds the microorganisms in our gut. Our food choices influence what strains of bacteria will flourish. While sensitive to acidity (pH) levels, and preferring their environments warm and dark, "They flourish when they get the right food and languish when they don't."¹ This may be the rationale behind why some can tolerate kimchi (a hot Korean

staple), for example, and others cannot. It is believed that what is eaten early in life, determines the intestinal milieu. "Evidence suggests that a kind of microbial template is established in the early years of life that may reflect an individual's initial diet and birth culture."² Basically, we are one big walking Petri dish. It all sounds pretty gross doesn't it? It does until one realizes what all these microorganisms do for us.

While scientists have only 'decoded' 10 percent of our friendly guests, they do know that the roles of the intestinal flora are numerous and essential. The varieties among the trillions of microbes provide differing functions and tools. Their specific DNA determines their unique mechanism of action. They include:

- training and maturation of the immune system,
- maintaining an immunologically balanced inflammatory response,
- reinforcing the barrier function of intestinal mucosa,
- the production of vitamins and hormones, some of which direct the storage of fats,
- preventing the attachment of pathogenic microorganisms and the entry of allergens,
- growth prevention of harmful species and yeast overgrowth,
- regulation of bowel movements, prevention of bloating and gas,
- aiding digestion of food, breaking down proteins, helping with absorption and extraction of energy from the foods we eat.

We don't think about this internal flora until sudden and severe imbalance occurs as in "Montezuma's revenge" or traveler's diarrhea. But this

microbial world impacts our state of health and well-being much more than we realize.

Imbalance between friendly and pathogenic bacteria has been studied in relation to the national epidemic of obesity. Reported in the British journal *Nature*, certain intestinal bacteria may encourage weight gain. When U.S. researchers compared the bacterial world of the obese with the lean, they found that those who were obese had less of a certain class of bacteria (Bacteroidetes) than their slender counterparts and more of a different group (Firmicutes). Ninety percent of intestinal bacteria is composed of these two groups.

Curious as to whether this difference had some bearing on girth growth, the research team manipulated the intestinal flora of rodents. They found that “the gut bacteria of obese mice not only had fewer Bacteroidetes than their skinny counterparts, but also that their bacterial genome was rich in genes that broke down hard-to-digest foods more efficiently.” In other words because they were more efficient in digesting, they were able to extract more calories from food. The research team then transferred the gut microbes from the obese mice to the skinny ones which amazingly resulted in weight gain.³

Led by Dr. Jeffrey Gordon director of the genome science center at Washington University in St. Louis, the team wanted to see if a similar reaction would occur in humans. Transferring the intestinal flora in humans though could not be done in the same way as in the mice. With humans, the change came about through diet. Obese individuals were placed on a restricted diet for a year. It was found that through this altered nutritional regime, the bacterial balance also changed. Firmicutes were reduced and the Bacteroidetes increased in number. “By changing our diet, we can change the kind of bugs found in our colon, from those found in an obese person’s colon to that of a lean person’s colon,” said

Dr. Samuel Klein, director of the human nutrition center at Washington University.”⁴ Apparently, the concept of dieting involves more than calorie counting and calorie expenditure. It appears that the intestinal flora may have an affect as well.

‘Good’ and ‘bad’ bacteria both inhabit us. Competition between the various strains of microorganisms is high. Real estate is limited. To a certain degree our lifestyle strengthens or represses the warring factions. Keeping our microbial world healthy and in balance ensures that we will have the best fight for good health and happiness.

The Bible speaks of another war taking place within us, a war between the “the law of sin which is in my members” and the “law of my mind, the law of God . . . the law of the Spirit of life” (Romans 7:23; 8:2).

At different stages of our Christian experience we may feel as if the war is tearing us in two. We struggle between the flesh and the Spirit. This law of sin, this law of self, lives in continual contradiction. It is in my “members,” a part of who I am as a fallen human being. Without the doing and dying of my Saviour and without the gift of His Spirit, I am a defeated soul. But wondrous joy, God helps those who cannot help themselves. He is our only hope.

The principle, or law of sin, that dwells in us, was defeated by the power of God in the humanity of Jesus Christ. In Him we are more than conquerors.

“Thanks be to God who gives us the victory through our Lord Jesus Christ” (1 Cor 15:57). Thanks be to God for the way of escape He has made for us. Thanks be to God who alone can make us truly gorgeous on the inside.

To be continued . . .

¹ Marcella Pick, OB/GYN NP, “Probiotics – for life!” <http://www.womentowomen.com/digestionandgihealth/probiotics.asp>.

² *ibid*.

³ “Bacteria might make you fat.” Dec. 21, 2006. <http://www.cosmosmagazine.com/node/951>.

⁴ April Armstrong, M.D., “Overweight? It could be your intestinal bacteria.” Dec. 20, 2006, p. 2. <http://abcnews.go.com/Health/story?id=2740978&page=1>.

