



Microbiota-Driven Weight Loss Exterminating Bad Bugs

By Guy Schenker, DC

Consider your patient population. Tom has a tubby tummy, Heidi has hippo hips, and Ellen is just as big as an elephant. They all have tried one weight loss scheme (scam) after another, with nothing but frustration. You can help them.

You must understand there is one hidden force creating a barrier to weight loss — an evil controller operating from deep within to derange metabolic utilization of fat and carbohydrates for either energy production or for adipose storage. That barrier to metabolic control is constructed by a family of nasty critters dominating the gut microbiota.^{1,2,3,4}

You and your patients must fully appreciate the far-reaching effects of the microbiota on metabolism. Gut microbes, for better or worse, exert powerful control over all metabolic processes. These wee beasties have direct communication lines over which they influence the assimilation and destination of macronutrients.^{4,5,6,7,8,9} They operate via:

- The Microbiota-Gut-Adipose Axis
- The Microbiota-Gut-Liver Axis
- The Microbiota-Gut-Pancreas Axis
- The Microbiota-Gut-Muscle Axis
- The Microbiota-Gut-Hypothalamus Axis.

The barriers created by bad bugs in the gut will stymie even the most sensible weight loss efforts. Shedding gobs of adipose certainly requires more than purging the bad guys and infusing a probiotic army of metabolic saviors, but as Tom,

Heidi, and Ellen will testify, no diet will work until that is achieved.

There is a complex interplay of gut microbiota and host metabolism in regulation of efficient metabolism versus weight gain. It all begins in infancy. In fact, it begins with an infant's "first meal" during birth.

As the baby slides down the birth canal, its entire body is coated with the mother's microbiota. That implantation sows the seeds for that infant's microbiome balance (or imbalance), which will tend to persist for life. Fortunately, that microbiota is modifiable by dietary and synbiotic (probiotic and prebiotic) supplementation throughout childhood and into adulthood.^{2,3,10}

Bacterial balance in the microbiota of children who are overweight differs from those who are normal weight. The two fundamental imbalances driving toward childhood obesity are an elevated ratio between the *Firmicutes* to *Bacteroidetes* phyla, along with lower microbiota diversity. Surprisingly, one of the major offenders of the excess *Firmicutes* phylum is a certain species of the *Lactobacillus* genus — the ubiquitous *Lactobacillus acidophilus*. The natural microbiota of infants includes very little *L. acidophilus*, and that population vanishes almost entirely after the first year.^{1,10}

The link between the *Firmicutes* to *Bacteroidetes* ratio persists in overweight adults. Any effort to control excess weight gain must include a rebalancing of the gut microbiota. Clearly, the first step is to minimize *Lactobacillus acidophilus* (which precludes the use of probably 90% or more of all probiotic supplements).^{1,10}

However, looking at the *Firmicutes/Bacteroidetes* ratio as an indicator of obesity risk can be misleading. It is not at all the case that high *Firmicutes* cause obesity and low *Bacteroidetes* help weight loss. Several *Bacteroidetes* species can induce weight gain.

The critical consideration is actually more related to an excess of certain genera among the *Firmicutes phylum*. In other words, do not be misled into thinking that you want to control weight by increasing *Bacteroidetes*. Many of the *Bacteroidetes* strains are responsible for elevating cholesterol and triglycerides, and others are associated with nonalcoholic fatty liver disease. No, your approach is to selectively cultivate a population of the beneficial *Firmicutes* species and eradicate the bad bacteria that encourage weight gain, while decreasing all the other inflammatory conditions they cause.^{1,3,10}

This misconception about the *Firmicutes/Bacteroidetes* ratio can lead to false assumptions. Since *L. reuteri*, one of the

most powerful anti-inflammatory probiotics, tends to be high in the microbiota of overweight individuals, it is misconstrued that *L. reuteri* is a causative factor in obesity. Quite the opposite is true.

Again, recall that transmission of information over the microbiota Gut-Adipose, -Liver, -Hypothalamus, and -Pancreas Axes goes two ways. An increase in *L. reuteri* is actually a defensive physiological attempt to mitigate the anti-metabolites produced by dysbiosis.¹⁰

You must remain cognizant that weight gain is an inflammatory process, and there is constant communication between adipose tissue and the gut. That communication line networks with the Gut-Hypothalamus

Axis, the Gut-Liver Axis, and the Gut-Pancreas Axis. One of the primary benefits of a healthy microbiota is the production of short chain fatty acids (SCFA).

The most important SCFA is butyrate, which enhances metabolism by increasing mitochondrial activity and prevents formation of endotoxins. It is powerfully anti-inflammatory, both within the gut and via its influences through the Gut-Immune Axis. *Lactobacillus reuteri* is among the probiotic species yielding the most butyrate.^{4,10}

L. reuteri is powerfully anti-inflammatory through several

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mechanisms including the production of butyrate. Regarding fat metabolism, it is specifically shown to benefit nonalcoholic fatty liver disease and to decrease elevated blood cholesterol. *L. reuteri* improves insulin resistance, minimizes endotoxin, improves intestinal barrier function, and increases the hormone GLP-1, which is essential for weight loss. *L. reuteri* perfectly exemplifies the misunderstanding among many alternative healthcare practitioners who continue to recommend probiotic supplements that include counterproductive species, such as *L. acidophilus*, while remaining ignorant of the true warriors in the “battle of the bulge.”^{1,10}

Also essential to weight loss are several species of *Bifidobacterium*. Compared to a control group, overweight subjects supplemented with *Bifidobacterium breve* significantly reduced percent body fat and body fat mass and decreased triglyceride levels and improved HDL cholesterol.¹¹

Subjects with a BMI greater than 25 but less than 30 were supplemented with *B. breve* for 12 weeks during which they were instructed not to change their eating or exercise habits. Compared to the control group, the test group significantly decreased waist circumference, hip circumference, body fat mass (particularly visceral fat), and BMI. *B. breve* supplementation also increased glucagon-like peptides and proglucagon expression in the intestine, and adiponectin expression in the B-epitular fat pad, both of which are effective in preventing obesity and insulin resistance.¹²

Participants with a BMI greater than 23 and less than 30

were supplemented with *B. longum* and *B. breve* for 16 weeks. Compared to the control group, participants showed a significant decrease in abdominal fat, serum triglycerides, and BMI. It is also noted that the probiotic supplementation improved intestinal barrier function, and decreased endotoxin. Inflammatory markers known to induce excess fat accumulation or insulin resistance were also decreased.¹³

The probiotic species most powerfully removing the barriers to weight loss include not only *L. reuteri*, *B. breve*, and *B. longum*, but also *Lactobacillus rhamnosus*, *Lactobacillus gasei*, *Lactobacillus casei*, and *Lactobacillus planterum*. The benefits of these probiotics in weight loss are facilitated by the addition of prebiotics, including particularly Inulin FOS and Glucomannan.¹

You can easily break down the bad bug barrier to weight loss. Exterminate those evil critters lurking in the darkness while building an army of microbiota warriors fighting to control fat metabolism. All you need is specificity in probiotic supplementation. Tom, Heidi, and Ellen are desperate for your help.



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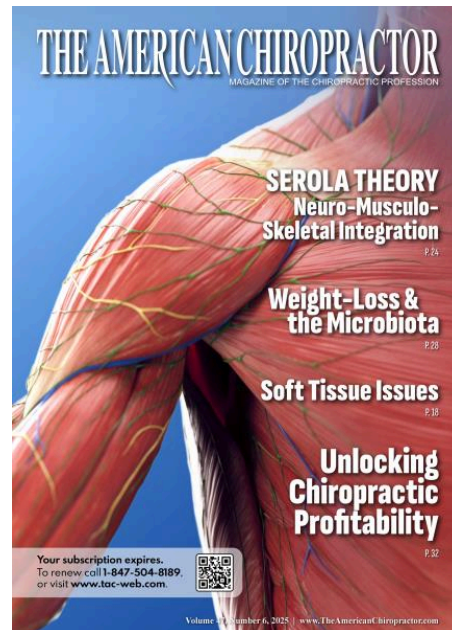
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