Do you haf any of that lacatobathilithy stuff??? I hear—hiccup—that it’s good—hiccup—for my fibber..ah…hibber…ah…no, no, libber, ya libber.

As promised in the last post, I want to now turn my attention to alcoholic liver disease (ALD).

ALD is a major cause of mortality. It claims more than 75,000 lives worldwide each year. Of the estimated 14 million alcoholics in the United States, about 10% to 20% will develop cirrhosis at some point. ALD accounts for 40% of the deaths from liver cirrhosis and 30% of the deaths from liver cancer.

Not all heavy drinkers, however, come down with severe liver disease. Only about 30% end up with alcoholic steatohepatitis (ASH) or cirrhosis. It’s obvious that something more than alcohol is involved here.

That something appears to be endotoxemia.

In animal studies, rodents whose guts were sterilized with antibiotics were protected from liver injury even when fed large amounts of alcohol for extended periods of time. In an experiment published in 1994, rats given *Lactobacillus* were observed to have significantly reduced severity in alcoholic steatohepatitis or inflamed fatty liver in contrast to controls.

A study published in 2009 sought to determine if *Lactobacillus rhamnosus GG* would prevent alcohol induced leaky gut and alcoholic steatohepatitis. The experiment was conducted on male Sprague-Dawley rats. These furry critters were fed alcohol through a gavage or tube to their stomach, not my idea of a good time but no doubt a very effective way to get them drunk.

Along with their hooch, rats were fed either a slurry (yum yum) of rat chow or a slurry containing *Lactobacillus* once daily in addition to the readily available chow in their cages. Two other groups of sober rats served as controls and no doubt looked down their whiskers at the inebriated group or were painfully jealous.
This rat pack bender continued for ten weeks, no doubt exceeding anything experienced by their human equivalents with the possible exception of Dean Martin. How much machismo high fiving or other stupidity ensued as a result of all this goes unmentioned by the researchers. At the end of the experiment they were all humanely dispatched to that great cantina in the sky to study the effects of all this rotgut on their thoroughly soused bodies.

And what, gentle reader, were the results?

Well, the *Lactobacillus*-fed rats had livers that were in far better shape than their non-"Lactobacillus" party mates. The degree of alcohol-induced steatohepatitis was three-fold higher in the non-probiotic group. The alcohol-fed probiotic group had livers that were not much different than the livers of rats not fed alcohol.

Liver inflammation was also less. In fact, seven times less than in the rats who did not partake of the *Lactobacillus* juice. They also had significantly reduced fat in their livers. Oxidative stress markers were also much lower.

After ten weeks the run-of-the-mill, alcohol-fed rats had guts leakier than a Swiss-cheese rowboat while their probiotic cohorts experienced less than half as much intestinal permeability, although more than their alcohol-abstaining cohorts.

Probiotic-fed rats also experienced lower oxidative stress in both the small and large intestine than their non-probiotic drinking pals but higher than in non-alcohol consuming rats. *Lactobacillus* feeding also reduced systemic inflammation 7.8 fold compared to the non-*Lactobacillus* rats.

There were a number of hypotheses the researchers put forth to explain these results:

- The data from this and similar studies strongly suggest that administering *Lactobacillus* prevented or significantly reduced gut leakiness by improving gut barrier function. Gee, were have I heard that before? Beneficial bacteria produce antimicrobial substances that guard against pathogens and their damaging effects on the gut wall.
- *Lactobacillus* controls epidermal growth factor thus preserving the integrity of the intestinal wall by its actions on the enterocytes.
- *Lactobacillus* has a very strong antioxidant effect on the cells lining both the small and large intestine thereby reducing inflammation.
- *Lactobacillus* prevents bacterial overgrowth. As many of you know from my small intestinal bacterial overgrowth (SIBO) series, and the previous post on non-alcoholic liver disease (NAFLD), SIBO is very prevalent in both alcoholics and in those afflicted with NAFLD. In animal models of both disorders, endotoxin levels are consistently found to be raised in blood plasma.

So for all you binge drinking rats out there, don’t forget to put a bowl of probiotics next to the cheese plate the next time you party down!

Now let’s look at a prospective, randomized pilot study using probiotics in human alcoholics.

Sixty-six adult Russian alcoholics were admitted to a psychiatric hospital with a diagnosis of alcoholic psychosis. The average daily consumption of alcohol in this group before hospitalization was about a fifth of vodka…Na zda-ró-vye! Their last drinks were within 48 hours of admission.

Along with the sixty-six alcoholics, twenty-four healthy, adult males served as controls.

Of the enrolled alcoholics, 34 were randomized into standard treatment while 32 were placed in a group also receiving standard treatment but with the addition of probiotic supplementation. Probiotics consisted of both *Bifidobacterium bifidum* and *Lactobacillus plantarum*. They were
administered and taken once a day for five consecutive days.

Now for the results.

All alcoholic patients had elevated markers for liver disease as compared to the healthy controls at the start of this trial. No surprise there. However, after just five days of probiotic supplementation, the probiotic group experienced significant reductions in liver disease markers as compared to the standard-treatment group.

The alcoholics also had significantly reduced numbers of bifidobacteria, lactobacilli and enterococci than healthy controls at the start of the study. *E. coli* counts were also higher in the heavy drinkers than controls. After just five days of treatment, the probiotic group had levels of bifidobacteria, lactobacilli and enterococci that matched levels in the healthy controls.

What can we learn from these two studies?

Simple. Keeping your gut flora populations healthy and happy keeps you healthy and happy even when you drink or eat too many of the wrong things.

This isn’t a license to throw all dietary caution to the wind, however. Far from it. Many of the foods we eat and the alcohol we ingest predisposes to small intestinal bacterial overgrowth and liver disease for reasons I’ve already covered.

And while limiting or avoiding those foods or curbing binge drinking is a very important first step, it is not likely to restore your liver health if you don’t correct the disordered gut flora that got you there in the first place.

A toast to your health!

References:


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