



Did you know harmful gut microbes can lead to **LIVER DISEASE?**

The gut and liver connection is referred to as the gut-liver axis.¹ The gut and the liver are connected because they are anatomically close to each other. There is also a functional connection between the lining of the intestines and the liver through the portal system.¹ The portal venous system is responsible for directing blood from parts of the gastrointestinal tract to the liver. Substances absorbed in the small intestine travel first to the liver for processing before continuing to the heart. The section of the GI tract involved directly with the liver extends from the lower portion of the esophagus to the upper part of the anal canal. It also includes blood vessel drainage from the spleen and pancreas.

The liver is a very important organ which detoxifies the body, secretes bile to dissolve fats during digestion, regulates glucose, metabolizes lipids, and does its best to deactivate and eliminate toxins from the body.¹ The liver has numerous biochemical functions that keep the body healthy, so is very important to keep the liver healthy with good lifestyle choices. In fact, the liver is the one organ that can repair itself and regenerate even new tissue, if it is healthy. In addition, liver cells are abundant in mitochondria—the powerhouse of each cell in the body—because the cells are very biochemically active.

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WHAT HAPPENS WHEN THE LIVER IS DAMAGED?

When the liver becomes damaged, several enzymes leak from the liver cells and circulate in the blood stream. These enzymes appear in a blood test and can alert the physician to possible liver damage. Other tests can tell if certain damage has been done by measuring immune responses. These are called “markers” because evaluating these components in the blood can tell the physician what is going on in the body.¹

Fatty liver disease is a result of excess dietary sugar because the body turns the sugar it does not utilize into fat and the liver starts storing this fat in the cells. Storing this fat is harmful to the mechanics of the liver cells and eventually leads to fatty liver disease. The liver begins producing connective tissue, which overtakes the organ and is called cirrhosis or fibrosis. The veins and blood vessels become obstructed, there is no blood flow to the liver cells and the liver can eventually shut down.

Nonalcoholic fatty liver disease is the most common liver disorder in the world. If liver damage continues, the fatty liver can turn into hepatitis, cirrhosis and severe mutations in the liver tissue.¹

FATTY LIVER



No treatment has been established for nonalcoholic fatty liver except lifestyle modifications.¹ One of the adverse conditions leading to nonalcoholic fatty liver is associated with overgrowth in the small intestine of unfriendly microbes and increased intestinal permeability. Harmful gut microbes produce ethanol and lipopolysaccharides, causing severe oxidative stress and increased inflammation, leading to the fatty liver disease process.¹



DO PRE- AND PROBIOTIC SUPPLEMENTATION SUPPORT LIVER HEALTH?

Because of the known connection between the liver and the gut, a group of scientists recently conducted a study to evaluate the effects of taking a prebiotic and probiotic dietary supplement on subjects who were diagnosed with nonalcoholic fatty liver.¹ Fifty two subjects were randomized to take the dietary supplement or placebo twice daily for 28 weeks. Liver enzymes (markers of liver damage), inflammation markers such as C-reactive protein, tumor necrosis factor, and a fibrosis score were among the tests performed on both groups. Subjects were advised to follow an energy balanced diet and physical activity recommendations.¹

The results showed the group receiving the prebiotic and probiotic supplement had improved liver enzyme scores, improved C-reactive protein scores, improved tumor necrosis factor and improved fibrosis scores.¹ These scores were statistically significant in their improved outcomes as compared to the group receiving the placebo. The supplement supported the reduction in many markers of inflammation and reduced the liver enzymes showing an improved condition of the liver in this preliminary study.¹

KICK OUT BAD MICROBES WITH PROBIOTICS AND PREBIOTICS

Part of the benefit of taking a good probiotic supplement is that the good bacteria can colonize the GI tract. Both good and bad bacteria compete for nutrients and when an individual continues taking good microbes, they begin to dominate the population, pushing the harmful microbes out. This is similar to weeding your garden. When you remove the weeds, there is more water, nutrients and sunshine for the types of plants you want to grow. As the good plants take hold, there is less room for the harmful weeds and they die off. Prebiotics such as fructooligosaccharides are important to feed particular bacteria in the colon area to keep good microbes inhabiting the colon.



10 TIPS TO SUPPORT YOUR LIVER FUNCTION AND HEALTH

1. Keep up to date with your medical tests to look for markers for liver damage.
2. Talk to your health care provider: certain prescription medications can harm the liver.
3. Limit or abstain from drinking alcohol.
4. Maintain a healthy weight and get some exercise, as it is good for the circulation to all organs.
5. Eat a healthy diet by limiting carbohydrates, sugar and unhealthy fat intake.
6. Limit over-the-counter pain medications, particularly acetaminophen (i.e. Tylenol and others) as they are known to damage the liver with continuous use.
7. Take DIGESTIVE+++ to assure you are colonizing your gut with healthy and beneficial microbiota. The spore-forming microbe survives digestion and colonizes the digestive tract and colon.
8. DIGESTIVE+++ contains prebiotics such as fructooligosaccharides, Jerusalem Artichoke and Yacon Root, which encourage the growth of beneficial microbes in the lower gut and colon.
9. DIGESTIVE+++ contains the full range of enzymes that break down fats, proteins and carbohydrates, helping you digest the nutrients in your food, releasing minerals, vitamins and other co-factors.
10. The last PLUS factor in DIGESTIVE+++ is flaxseed oil. Flaxseed oil has been found to be beneficial for those with conditions such as inflammation of the bowels and digestive tract. Several studies have found that flaxseed oil seems to be able to calm the inner lining of the inflamed intestines. It also has component that help its effectiveness as a natural laxative.



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REFERENCE

1. Eslamparast T, Poustchi H, et al. Synbiotic supplementation in nonalcoholic fatty liver disease: a randomized, double-blind, placebo-controlled pilot study. *Am J Clin Nutr*, 2014, 99;535-42.