

Restoring Liver Health: Treating Fatty Liver with Biological Medicine

Did you know that approximately 32% of adults worldwide suffer from non-alcoholic fatty liver disease (NAFLD), often without being aware of it (1)? Common symptoms like fatigue, difficulty concentrating, or digestive issues such as bloating or a feeling of pressure in the upper abdomen could be signs of NAFLD. Left untreated, this condition can progress to more severe liver diseases, including inflammation, fibrosis, or cirrhosis. However, as the saying goes, "*The liver grows with its tasks.*" This phrase highlights not only the liver's remarkable adaptability but also its incredible capacity to regenerate—emphasizing how crucial timely support is for maintaining liver health.

How Does Fatty Liver Develop?

A fatty liver can be described as a chronic overload of the liver, leading to fat accumulation within its cells. This overload often results from factors such as metabolic disorders, unhealthy diets, obesity, and toxic influences, including alcohol or environmental pollutants. When the liver stores excessive fat over time, it results in fat deposits within liver cells, impairing its function and potentially causing damage. Fatty liver is often the first step toward more serious conditions, such as non-alcoholic steatohepatitis (NASH), cirrhosis, or even liver cancer (2). This makes it crucial to take early action to preserve and support liver health.

Non-Alcoholic Fatty Liver Disease (NAFLD)

Non-Alcoholic Fatty Liver Disease (NAFLD) encompasses a wide spectrum of conditions, ranging from the accumulation of fat in liver cells (steatosis) to fibrosis (scarring). NAFLD is closely linked to metabolic disorders such as obesity, insulin resistance, and elevated levels of leptin—a hormone that regulates hunger and satiety. These factors drive the excessive storage of fats, particularly triglycerides, in liver cells, creating a vicious cycle. Increasing toxic burden combined with inflammation further impairs liver function (3).

We know the liver has a central role in metabolic and detoxification processes but what exactly are the liver's functions, and why is it so vital to protect this remarkable organ?

Functions of the Liver

The liver is often referred to as the "chemical factory of the body," our biggest inner organ that works tirelessly to sustain vital processes. Its central role extends far beyond detoxification and encompasses essential functions related to metabolism, the immune system, and the maintenance of overall body homeostasis (e.g., balancing blood pH, temperature, and glucose levels).

One of the liver's primary tasks is regulating blood sugar levels. Excess glucose is stored as glycogen in the liver and released when needed to stabilize the body's energy supply. Additionally, the liver produces essential fats, such as cholesterol and triglycerides, as well as proteins like albumin, which are crucial for fluid balance and substance transport in the blood.

Notably, the liver produces 800–1,000 milliliters of bile daily, a golden liquid indispensable for fat digestion and the absorption of fat-soluble vitamins (A, D, E, K). Bile also plays a key role in detoxifying fat-soluble toxins, such as xenohormones, which are increasingly present in modern environments. This bile is collected in tiny liver ducts and transported via the bile duct to the small intestine, where it performs its vital functions.

In protein metabolism, the liver converts dietary proteins into amino acids, which can be used for energy or converted into carbohydrates and fats. This process generates ammonia, a toxic byproduct that liver cells transform into harmless urea. Urea is then transported to the kidneys and excreted in urine, making kidney health equally important in this detoxification pathway (4).

The liver also plays a pivotal role in blood clotting by producing essential proteins with the help of vitamin K. Furthermore, it is responsible for breaking down old or damaged blood cells, ensuring the blood remains replenished and functional.

As a storage organ, the liver safeguards vital nutrients, including vitamins A, D, and B12, minerals such as iron and copper, and energy reserves in the form of fat (triglycerides) and glycogen. This storage function ensures the body has resources to draw on during times of need.

As the body's detoxification hub, the liver filters harmful substances such as heavy metals, alcohol, and drug residues from the bloodstream. Known as the "cleaning crew of the blood," the liver supports the immune system through this essential work. Specialized Kupffer cells monitor the blood flowing into the liver, removing pathogens and cellular debris. However, excessive strain on the liver—caused by high protein intake, environmental toxins, or poor lifestyle choices—can impair its functionality.

In Traditional Chinese Medicine (TCM), the liver is considered the seat of "Qi," or life energy, symbolizing vitality, creativity, and drive. Neglecting liver health not only burdens this central organ inviting disease into the body, but also our joy of life. The liver deserves our attention—not only as the body's chemical factory but also as the key to a life of balance and energy.

Treatment Options

Currently, there is no specific pharmacological treatment approved directly for fatty liver generally and NAFLD in particular. Conventional approaches primarily rely on medications for weight control, insulin sensitization, and lipid reduction. Commonly used drugs, such as GLP-1 agonists, thiazolidinediones, and statins, may have significant side effects, including gastrointestinal issues like diarrhoea, muscle pain, unregulated fat excretion (anal leaks), and increased cardiovascular risks (5-7).

In contrast, our approach focuses on addressing the root causes of NAFLD, such as toxic burden, unhealthy lifestyle, gut health, and nutritional deficiencies. We prioritize sustainable lifestyle changes, personalized dietary plans, and targeted therapies to restore metabolic balance and optimize liver health.

The Paracelsus Clinic Approach

A diagnosis of fatty liver can be made through blood tests (e.g., elevated liver enzymes such as ALT, AST, GGT), ultrasound, or other diagnostic methods. For patients seeking non-pharmaceutical solutions, our approach emphasizes comprehensive analysis, dietary changes, weight reduction, metabolic health restoration, gut health improvement, and targeted liver support.

We begin with an in-depth medical history and diagnostics to identify underlying causes. Beyond conventional liver tests, we conduct holistic evaluations to provide a complete picture of health. These include assessments of current medications, digestion, physical condition, abdominal examination, tongue analysis, nutrition, the autonomic nervous system (VNS analysis), including lab markers like homocysteine. Often, intestinal issues like dysbiosis play a critical role in NAFLD, exacerbating the condition.

Gut Health, Nutrition, and Metabolic Disorders

Intestinal health is closely linked to the development of fatty liver disease. A disrupted microbiome promotes the release of inflammatory molecules such as lipopolysaccharides (a chemical compound of sugar and fat), which contribute to insulin resistance. Excess body fat releases free fatty acids (FFAs), overburdening the liver, while insulin resistance disrupts glucose and lipid regulation. Excess glucose is converted into fat and stored in the liver, amplifying oxidative stress and inflammation (8). These metabolic disruptions impair liver function and contribute to fatigue, poor concentration, and a weakened immune system.

To address these metabolic and gut-related causes, we combine conventional medical tests with holistic methods, including dark-field microscopy to analyze excess fats, tissue acidity, toxins etc. in the inner milieu; homocysteine measurement; fatty acid profiling; and stool tests (microbiome analysis). These tests provide insights into the digestion of fats, proteins, and glucose, as well as the gut flora, which plays a key role in inflammation and metabolic disorders. A detailed nutrition questionnaire and nutritional consultation help identify individual triggers related to diet and lifestyle.

Micronutrient Deficiencies and Inflammatory Processes

A lack of essential micronutrients plays a central role in the development and worsening of chronic inflammation, significantly influencing the progression of non-alcoholic fatty liver disease (NAFLD). Nutritionally poor diets, especially those with low consumption of water-soluble fibres, vegetables and phytochemical-rich foods (secondary plant compounds), reduce enzymatic activity and availability of anti-inflammatory substances like polyphenols and anthocyanins. These substances help combat oxidative damage and inflammation. Additionally, deficiencies in vitamins and minerals, such as zinc, selenium, and vitamin D, weaken the liver's antioxidant defense mechanisms, promoting inflammation. In cases of obesity, high leptin levels amplify inflammatory signals in the liver, stimulating the release of cytokines like TNF- α and IL-6. This accelerates tissue damage and increases the risk of NAFLD progressing to a more severe form known as NASH (non-alcoholic steatohepatitis). NASH is associated with fibrosis (scarring) and cirrhosis (hardening of the liver), both of which are serious liver conditions.

Toxic load

The liver is often overwhelmed by environmental toxins, food additives, and metabolic waste products. These burdens lead to oxidative stress, which damages liver cells and increases fat accumulation (10). An insufficient availability of detoxification enzymes, such as cytochrome P450, and antioxidant systems like glutathione, exacerbates the situation.

To address toxic burdens, we analyze and detoxify heavy metals using a chelation test, as well as organic toxins, such as xenohormones, pesticides, and medication residues. Additionally, we assess viral burdens, genetic predispositions for detoxification enzymes, dental heavy metal exposure, and other metabolic imbalances, as well as micronutrients in tissues, through an Oligo/Check test.

In particular, we test zinc and selenium, two essential cofactors in the detoxification process, as well as B vitamins (e.g., folate, B6) and other vital antioxidants. It is especially beneficial to integrate this data with stool tests, blood markers, and genetic analyses of detoxification enzymes.

Treatment of NAFLD with Biological Medicine

1. The role of Nutrition and Lifestyle at the Paracelsus Clinic

Nutrition is, in our view, the key to liver health. Our anti-inflammatory metabolic diet reduces systemic inflammation, optimizes metabolism, and supports liver regeneration. The nutritional advice aims to relieve the liver by recommending food which is easy to digest without putrefaction, less fermentation, rich in phytochemicals and vital nutrients and minimizes toxins. Therefore, our motto is: **It's not about what we take to get better, but about what we leave out that truly makes the difference.**

Over-Consumption of Protein (Overproteinization)

The liver cannot store amino acids, so excess proteins must be broken down immediately, resulting in ammonia, which the liver must detoxify and convert into urea. When this detoxification capacity is exceeded, it not only burdens the liver but also leads to tissue re-detoxification and tissue acidification. During protein breakdown, acidic metabolic byproducts are generated, which can lower the tissue pH. This latent acidification impairs cell functions and promotes inflammation, potentially causing various health problems in the long run. Therefore, balanced protein intake is crucial.

Excessive Sugar Consumption

Excessive sugar consumption can harm the liver in various ways. Fructose, a component of table sugar, is metabolized directly in the liver. When overwhelmed, the liver converts fructose into fat, which can result in fatty liver disease. In addition, sugar in the gut promotes fermentation, especially if the gut microbiome is imbalanced. This fermentation process produces alcohol and other toxic metabolic byproducts, which can enter the liver through the portal vein.

This "endogenous alcohol" stresses the liver similarly to external alcohol consumption, promoting inflammation and oxidative damage. A disrupted gut flora (dysbiosis) can further exacerbate this effect, as pathogenic bacteria or fungi increase the production of alcohol and other harmful substances. These processes increase the load on the liver's detoxification function, potentially leading to severe liver damage over time (11).

"Normal" Alcohol Consumption

Every drop of alcohol we consume and our body produces must be detoxified by the liver. In this process, acetaldehyde, a highly toxic byproduct, is produced. Acetaldehyde can damage cells, promote inflammation, and increase the risk of diseases, including cancer. Studies claiming alcohol to be healthy have now been disproved (12). New research shows that even small amounts of alcohol increase the risk of health issues such as cardiovascular diseases, liver diseases, and various types of cancer, including mouth, throat, breast, and colon cancer. Therefore, alcohol is not a health-promoting food, but rather a substance that should be consumed with caution.

Our nutritional therapy aims to minimize exposure to toxins from food, medications, and the environment, recommending a focus on natural, unprocessed foods.

We place special emphasis on using phytochemicals (secondary plant compounds), vitamins, trace elements, and minerals essential for detoxification, such as glutathione, folic acid, selenium, and zinc. We also recommend intermittent fasting, a proven method to improve insulin sensitivity, reduce liver fat accumulation, and promote autophagy, a natural cellular detoxification process.

2. Paracelsus Clinic Therapies

While a balanced diet already contributes significantly to liver health, our specialized therapies offer additional support to optimize liver function, promote detoxification, and enhance overall health.

- **Neural Therapy:** Local injections to improve autonomic regulation and support organ regeneration, particularly the liver.
- **Indiba Therapy:** Local hyperthermia that stimulates cell regeneration and improves liver blood circulation.
- **Various Liver Support Remedies** are used individually. For example, bitter drops, some plant extracts (phytotherapy) and biochemically, Potassium Sulfuricum (tissue salts) are remedies for the liver.
- **Liver Wraps:** Targeted applications that enhance blood circulation and stimulate liver detoxification.
- **Special Infusions:** Customized intravenous infusions deliver essential nutrients, such as glutathione, zinc, magnesium, and B vitamins, to support liver detoxification phases 1 and 2.
- **Colon Hydrotherapy:** A specialized method for gut cleansing with a unique massage technique for reducing toxic load, and improving portal vein blood circulation, thereby relieving the liver.

3. Stress reduction

Chronic stress impairs liver regeneration by disrupting the autonomic nervous system and promoting inflammation. At the Paracelsus Clinic, we use guided breathing exercises to restore autonomic balance. By calming the body, lowering cortisol levels, and encouraging parasympathetic activity, we support liver health and overall well-being.

4. Paracelsus Liver Detox Program

With over 25 years of experience in a holistic approach to treating liver diseases, we offer a comprehensive and effective liver detox program, combining all proven therapies into a personalized treatment plan. This exclusive program not only promotes liver regeneration but also optimizes long-term health. It includes:

- Nutritional Therapy to address underlying metabolic blockages and inflammation drivers.
- Advanced Therapeutic Interventions, such as Neural Therapy, Indiba, and Colon Hydrotherapy, to support detoxification and liver repair.
- Special Infusions that support all detoxification enzymes and organs.
- Special Liver Flush that thoroughly cleans the liver of accumulated residues and improves bile flow.

This program is the first step to restoring liver function, increasing energy, reducing brain fog, reducing inflammation, and improving overall health.

The Liver's Remarkable Regeneration Ability

The liver is an extremely resilient organ and only shows problems when it operates on its final reserves. It doesn't usually hurt, and its issues often appear indirectly as fatigue, muscle pain, sadness, insomnia, nausea, etc. However, it has an extraordinary ability to regenerate, allowing recovery even after significant damage. Studies show that up to 70% of the liver can regenerate within six months with the right measures (13).

When the liver functions optimally, the entire body benefits and rewards us with:

- **More Energy:** An improved metabolism ensures sustained vitality.
- **Mental Clarity:** Efficient detoxification reduces brain fog and boosts cognitive performance.
- **Pain Relief:** Better hormonal regulation and lower systemic inflammation reduce chronic pain.
- **Higher Metabolism:** A healthy liver processes fats more efficiently, aiding weight management.

- Stronger Immune System: Enhanced detoxification and immune surveillance strengthen the body's defenses.
- Balanced Hormones: An optimized hormone metabolism promotes general well-being.

Supporting liver health through targeted treatments and lifestyle changes not only facilitates regeneration but also transforms overall health and life quality. Fatty liver and NAFLD is reversible – with the right combination of nutrition, detoxification, and targeted therapies. By integrating an anti-inflammatory diet, Biological Medicine, and innovative therapies, we help our patients restore liver health, reduce toxic exposure, and regain vitality.

If you or someone in your circle seeks a holistic solution for liver health, contact us to learn more about our programs and therapies.

Kind regards,

Dr Sonja Lewandowski and Sonja Bacus

Nutritionists at Paracelsus Clinic

References:

1. Teng ML et al. Global incidence and prevalence of nonalcoholic fatty liver disease. *Clin Mol Hepatol*. 2023 ;29(Suppl):S32-S42.
2. Pierantonelli I., Svegliati-Baroni G. Nonalcoholic Fatty Liver Disease: Basic Pathogenetic Mechanisms in the Progression From NAFLD to NASH. *Transplantation* 2019; 103: e1–e13.
3. Chowdhury F Zaman et al. A Multidisciplinary Approach and Current Perspective of Nonalcoholic Fatty Liver Disease: A Systematic Review. *Cureus*. 2022: 14.
4. Takaomi K. et al. Endotoxins and Non-Alcoholic Fatty Liver Disease. *Frontiers in Endocrinology*. 2021: 12.
5. Pafili K., Roden M. Nonalcoholic fatty liver disease (NAFLD) from pathogenesis to treatment concepts in humans. *Molecular Metabolism*. 2020: 50.
6. Sodhi M, Rezaeianzadeh R, Kezouh A, Etminan M. Risk of Gastrointestinal Adverse Events Associated With Glucagon-Like Peptide-1 Receptor Agonists for Weight Loss. *JAMA*. 2023 Nov 14;330(18):1795-1797.
7. Michalska-Kasiczak M. et al. Analysis of vitamin D levels in patients with and without statin-associated myalgia - a systematic review and meta-analysis of 7 studies with 2420 patients. *International journal of cardiology*. 2015; 178:111-6.
8. Barchetta I. et al. Vitamin D and Metabolic Dysfunction-Associated Fatty Liver Disease (MAFLD): An Update. *Nutrients*. 2020: 12.
9. Drummer C. et al. Caspase-11 promotes high-fat diet-induced NAFLD by increasing glycolysis, OXPHOS, and pyroptosis in macrophages. *Frontiers in Immunology*. 2023:14.
10. Enoch Cobbina et al. Non-alcoholic fatty liver disease (NAFLD) – pathogenesis, classification, and effect on drug metabolizing enzymes and transporters. *Drug Metabolism Reviews*. 2017; 49: 197 - 211.
11. Jensen T. et al. Fructose and sugar: A major mediator of non-alcoholic fatty liver disease. *J of Hep*. 2018; 68(5): 1063-1075.
12. Ortolá R et al. Alcohol Consumption Patterns and Mortality Among Older Adults With Health-Related or Socioeconomic Risk Factors. *JAMA Netw Open*. 2024;7(8):e2424495.
13. Yagi S et al. Liver Regeneration after Hepatectomy and Partial Liver Transplantation. *Int J Mol Sci*. 2020 Nov 9;21(21):8414.