

# Healing **Fatty Liver** Disease



A Complete Health & Diet Guide  
**Including 100 Recipes**

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# What Is Fatty Liver Disease?

## Case Study

### Tina White

Tina is a 45-year-old high-school science teacher. She recently had some blood tests drawn for life insurance. She found out that her life insurance was declined as she had hepatitis. Tina was in shock at this explanation. She was never jaundiced, nor had she had any unprotected sex, nor did she even drink alcohol! These were the main factors that Tina previously believed to be associated with hepatitis. Tina's family doctor referred her to a liver specialist, who, after some testing, told her she had non-alcoholic liver disease. She had never heard of this condition before. She set out to find more information so she could better understand and manage this disease.

## Liver Anatomy and Pathophysiology

Understanding NAFLD begins by learning how the liver works, specifically the anatomy and pathophysiology of this organ. The liver is the largest organ inside the body. It weighs between 3 and 3.5 pounds. The liver is located behind the ribs in the right upper portion of the abdomen. It is shaped like a triangle. The liver has two large sections, called the right and left lobes, and consists of many bile ducts, blood vessels, and specialized cells. The gallbladder sits under the liver, along with parts of the pancreas and intestines.

### Functions of the Liver

The liver's main function is to filter the blood coming from the digestive tract before the blood passes

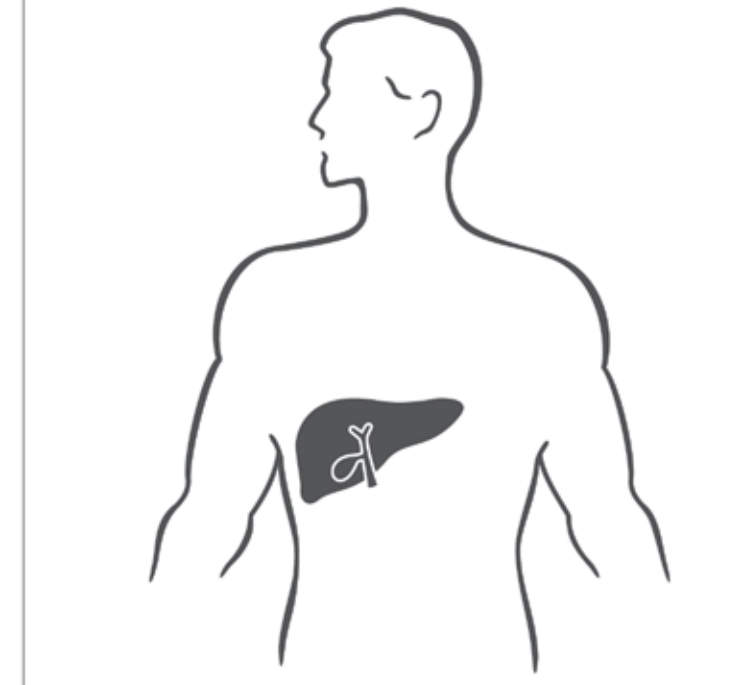
through to the rest of the body. Other functions of the liver include:

- Clearing the body of waste products, drugs and other poisonous substances.
- Producing proteins to clot blood and stop excessive bleeding.
- Producing immune factors that help remove bacteria from the blood stream to fight infection.
- Releasing bile, which is a substance to help digest food and absorb nutrients.

Any disruption of these functions can cause liver disease. Liver diseases are suspected when common liver disease symptoms are detected, risk factors for liver disease are present, and abnormal liver conditions are assessed through blood tests.

Duration of disease is associated with the risk of developing cirrhosis. NAFLD needs to be identified early in order to institute proper treatment that would reduce the risk of progression toward cirrhosis.

## Anatomy of the Liver



## DID YOU KNOW?

### Extremely Vital

The liver is an extremely vital organ. If the liver fails, or shuts down, your body will fail too, causing death. Fortunately, the liver has an amazing ability to function even when half of it or more is diseased.

**Q. Does non-alcoholic fatty liver disease affect children?**

**A.** NAFLD is not unique to adults. NAFLD has been reported in children as young as 2 years of age, although this is quite rare. However, NAFLD in older children and teenagers is being identified with greater frequency. It is estimated that one in ten Canadian children is overweight. This number has tripled in the last decade. NAFLD affects 3% of all children, and over 50% of obese children.

**Prevalence**

NAFLD is the most common cause of liver disease in North America. In the United States and Canada, 30% of the population has NAFLD. That is one in three people! Within the United States, there is a surprisingly varied prevalence of NAFLD based on ethnicity: 45% of Hispanics, 33% of Caucasians, and 24% of blacks are affected with NAFLD.

**NAFLD Spectrum**

NAFLD does not consist of one single type of liver abnormality. It is a broad term used to describe various findings in the liver that range in severity from mild disease at one end of the spectrum to severe disease at the other end. In NAFLD, there is a build-up of fat droplets in the liver tissue. Normally, fat should only live in fat cells. When fat starts to accumulate in greater quantities in organs where fat should not normally reside, this is a sign that these organs, such as the liver, are being negatively impacted by the presence of fat. When fat is present in the liver, without other findings to suggest more advanced disease, this is termed “simple steatosis” or “simple liver fat.” The presence of not only simple liver fat, but associated inflammation or scarring, is termed “steatohepatitis” or “NASH”.

**NAFLD or NASH**

Often the distinction between simple liver fat and liver fat plus inflammation or scarring can only be made using invasive tools such as a liver biopsy. In this book, going forward, we will use the term NAFLD to describe the over-reaching spectrum of diseases ranging from simple

steatosis to steatohepatitis (NASH). When we are dealing only with steatohepatitis (fat plus inflammation), the term “NASH” will be used. The distinction between simple steatosis and NASH is often necessary to elicit, as we know that simple steatosis usually carries a benign prognosis, without resulting in serious liver related consequences. In contrast, NASH is a progressive abnormality, meaning that people with NASH may progress with greater frequency to more ominous consequences of cirrhosis and advanced liver disease. About 20% of patients with NASH will develop cirrhosis. If your doctor has determined you have NASH, then you must work hard to make lifestyle changes that reduce your risk of developing cirrhosis of the liver.

**Alcohol Consumption**

Alcohol consumption can also result in simple steatosis or fat plus inflammation or scarring. In fact, if you look at a liver sample under the microscope, in patients with NAFLD and patients who drink excess alcohol, the liver pieces will look identical! However, the reasons for their identical appearance are quite different. Establishing alcohol consumption is a very critical piece of information your doctor should obtain when confirming your diagnosis of NAFLD. Often, many are embarrassed to admit to their accurate level of alcohol intake, for fear of being reprimanded or stigmatized. In the absence of honesty with your doctor, proper treatment cannot be provided to you.

**Case Study (continued)**

**Tina White**

Tina was assessed by her liver specialist, who sent her for a number of tests, which once completed confirmed the diagnosis of NAFLD. She was told that her weight gain during the past 10 years, along with her sedentary lifestyle, and high cholesterol all predisposed her toward NAFLD. Tina did not drink any alcohol. Her liver specialist had suggested a liver biopsy to determine whether Tina had simple steatosis or NASH. Tina decided to wait on making that decision until she was more informed about the risks and benefits of doing so.

# Sunny Day Shepherd's Pie

**Makes 6 servings**

*Shepherd's pie is comfort food at its finest. Here, it's updated with a sweet potato topping.*

## Tips

Have all your vegetables chopped before you start to cook this recipe.

Sweet potatoes are a source of soluble fiber.

## Variation

Use leftover mashed white potatoes instead of sweet potatoes.

### Nutrients PER SERVING

Calories	241
Fat	6.6 g
Carbohydrate	26 g
Fiber	4 g
Protein	19 g

- Preheat oven to 350°F (180°C)
- 8-inch (20 cm) square glass baking dish

1 lb	extra-lean ground beef	500 g
½ cup	chopped onion	125 mL
½ cup	chopped carrot	125 mL
½ cup	chopped celery	125 mL
½ tsp	freshly ground black pepper	2 mL
¼ tsp	salt	1 mL
¼ tsp	ground nutmeg	1 mL
1	clove garlic, minced	1
1½ tbsp	all-purpose flour	22 mL
1¼ cups	reduced-sodium beef broth	300 mL
½ cup	drained no-salt-added canned corn	125 mL
2 cups	mashed sweet potatoes (about 2 medium)	500 mL

1. In a large skillet, over medium-high heat, cook beef, breaking it up with the back of a spoon, for about 8 minutes or until no longer pink. Using a slotted spoon, transfer beef to a bowl and set aside. Drain off all but 2 tsp (10 mL) fat from the pan.
2. Reduce heat to medium. Add onion, carrot, celery, pepper, salt and nutmeg to the skillet and sauté for 4 to 5 minutes or until vegetables are softened. Add garlic and sauté for 30 seconds. Sprinkle with flour and cook, stirring, for 1 minute. Gradually stir in broth and bring to a boil; boil, stirring, until thickened. Return beef and accumulated juices to the pan and stir to coat.
3. Pour beef mixture into baking dish. Sprinkle corn evenly over top. Spread sweet potatoes evenly over corn.
4. Bake in preheated oven for 35 to 40 minutes or until a knife inserted in the center comes out hot.

*This recipe courtesy of Jennifer Lactin.*

# Sweet-and-Sour Pork

**Makes 8 servings**

*This combination of sweet and sour flavors is often featured in Asian dishes.*

## Tips

Trim as much fat and silverskin as you can from the pork.

When browning the pork, be sure it lifts easily before you turn it, to avoid sticking.

## Variation

For a leaner version, use medallions of pork tenderloin instead of pork shoulder; reduce the simmering time to 10 minutes.

### Nutrients PER SERVING

Calories	244
Fat	7.5 g
Sodium	316 mg
Carbohydrate	23 g
Fiber	1 g
Protein	21 g

- Dutch oven

3 tbsp	all-purpose flour	45 mL
½ tsp	freshly ground black pepper	2 mL
2 lbs	boneless pork shoulder, trimmed of fat and cut into 1-inch (2.5 cm) pieces	1 kg
2 tbsp	canola oil, divided	30 mL
2	cloves garlic, minced	2
2 cups	diced celery	500 mL
2 cups	reduced-sodium chicken broth, divided	500 mL
1	can (14 oz/398 mL) pineapple chunks, with juice	1
1	red bell pepper, cut into thin strips	1
3 tbsp	cornstarch	45 mL
¼ cup	granulated sugar	60 mL
½ cup	white vinegar	125 mL
1 tbsp	reduced-sodium soy sauce	15 mL

1. In a large, shallow bowl, combine flour and pepper. Dredge pork in seasoned flour, shaking off excess, and place on a clean plate. Discard any excess flour mixture.
2. In a Dutch oven, heat 1 tbsp (15 mL) oil over medium-high heat. Add half the pork and cook for 3 to 4 minutes or until well browned on all sides. Transfer pork to a clean plate. Repeat with the remaining oil and pork.
3. Return all pork and accumulated juices to pot. Add garlic and celery; sauté for 1 minute. Pour in 1 cup (250 mL) of the broth and deglaze the pot, scraping up any browned bits. Stir in pineapple with juice and bring to a boil. Reduce heat to low, cover with a tight-fitting lid and simmer, stirring occasionally, for 20 minutes. Stir in red pepper, cover and simmer for 10 minutes or until pork is tender.
4. Meanwhile, in a medium bowl, whisk cornstarch into the remaining broth. Whisk in sugar, vinegar and soy sauce, whisking until sugar is dissolved. Stir into pot and simmer, stirring, for about 5 minutes or until sauce is thick.

*This recipe courtesy of Anne Taylor.*

# Healing Fatty Liver Disease

## **PART I** **Understanding Non-Alcoholic Fatty Liver Disease (NAFLD)**

### **What is NAFLD?**

What are the Functions of the Liver?  
Who Gets NAFLD?

### **What Causes NAFLD?**

The Role of Obesity in NAFLD  
The Role of High Blood Pressure in NAFLD  
The Role of High Cholesterol in NAFLD  
The Role of Ethnicity in NAFLD

### **What Else Could This Be Apart from NAFLD?**

What Other Conditions Can Mimic NAFLD?  
What Tests Do I Need to Have Done to Confirm That My Condition Is NAFLD?

## **PART II** **Managing of Non-Alcoholic Fatty Liver Disease**

### **Lifestyle Therapy**

What Is the Role of Diet?  
Exploring Popular Diets

### **What Is the Role of Exercise Therapy?**

Are Physical Activity and Exercise Different?  
Is One Better Than the Other?

### **Are There Any Drug Therapies for NAFLD?**

Vitamin E  
Medications Traditionally Used for Diabetes  
Novel Therapies  
Exploring Prebiotics  
Exploring Probiotics  
Exploring Omega-3 Fatty Acids

## **PART III** **Sample 2-Week Meal Plans**

How to Calculate Your Caloric Requirements

### **Meal Plans**

For 1200 Kcal/Day  
For 1500 Kcal/Day  
For 2000 Kcal/Day

## **PART IV** **The Recipes**

### **Breakfasts**

Big-Batch Power Porridge  
Local Veggie Scrambled Eggs  
Oatmeal Banana Pancakes  
Pumpkin Pancakes  
Potato Latkes with Cilantro Sour Cream Topping  
Crêpes with Smoked Salmon  
French Toast  
Blueberry Bran Muffins  
Orange Cranberry Flax Muffins  
Berry Smoothie

### **Snacks, Sandwiches and Pizza**

Roasted Chickpeas  
Pesto-Stuffed Tomatoes  
Homemade Salsa  
Piquant White Bean and Parsley Dip  
Sardine and Pesto Spread  
Rainbow Lettuce Wraps  
Bulgur and Vegetable Lettuce Wraps  
Chicken, Hummus and Sautéed Veggie Wraps  
Tuna Salad Melt  
Big-Batch Whole Wheat Pizza Dough  
Ham and Pineapple Pizza

### **Soups**

Cream of Broccoli Soup  
Green Pea and Tarragon Soup  
Spinach Soup  
Barley Vegetable Soup

Country Lentil Soup  
Egg Lemon Soup  
Hot and Sour Chicken Soup  
Curried Coconut Chicken Soup  
Chicken and Corn Chowder  
Hamburger Soup

### **Salads**

Citrus Fennel Slaw  
Beet, Orange and Jicama Salad  
Cucumber Watermelon Salad  
Greens with Strawberries  
Spinach and Goat Cheese Salad  
Tomato Mozzarella Salad  
Herbed Green Potato Salad  
Best Bean Salad  
Vegetable Quinoa Salad  
Vietnamese Chicken and Rice Noodle Salad

### **Meat and Poultry Main Dishes**

Beef Tenderloin with Blue Cheese Herb Crust  
Beef Stew  
Sunny Day Shepherd's Pie  
Mustard Lamb Chops  
Pork Tenderloin  
Sweet-and-Sour Pork  
Brined and Tender Lemon Roast Chicken  
Chicken Florentine  
Chicken in Butter Sauce  
Chicken Vegetable Lasagna  
Pad Thai  
Thai Turkey Stir-Fry  
Spicy Brown Rice Jambalaya

### **Fish and Seafood Main Dishes**

Tasty Fish Cakes  
Oven-Baked Fish and Chips  
Tandoori Haddock  
Teriyaki Halibut  
Cedar-Baked Salmon  
Maple Ginger Salmon  
Peachy Glazed Trout  
Italian Seafood Stew  
Pasta with White Clam Sauce  
Stir-Fried Scallops with Curried Sweet Peppers

Scallop Risotto  
Easy Shrimp Curry  
Linguini with Chili Shrimp  
Asparagus, Lemon and Dill Shrimp Linguine

### **Vegetarian Main Dishes**

Chickpea Curry  
Vegetarian Chili  
Easy Black Beans  
Portobello Mushroom Burgers with Cheese Filling  
Vegetable Moussaka  
Eggplant Lasagna  
Spaghetti Squash with Mushrooms  
Butternut Squash, Spinach and Feta Frittata  
Potato-Crusted Zucchini, Carrot and Smoked Cheddar Quiche  
Teriyaki Tofu Stir-Fry  
Tofu Patties

### **Side Dishes**

Roasted Lemon Asparagus  
Green Beans with Tomato Sauce  
Braised Red Cabbage  
Ginger Carrots  
Spinach Fancy  
Quick and Delicious Maple Squash  
Roasted Vegetables  
Dijon Mashed Potatoes  
Yam Fries  
Spinach Rice  
Cornmeal Casserole

### **Desserts**

Fresh Berry Trifle  
Pumpkin Pie Tarts with Ground Almond Crust  
Blueberry Semolina Cake  
Carrot Cake  
Chocolate Zucchini Cake  
Applesauce Snack Cakes  
Ginger Cookies  
Rice Pudding  
Mango Mousse  
Lemon-Lime Sorbet

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