



NON-ALCOHOLIC FATTY LIVER DISEASE & NUTRITION

DR HANA KAHLEOVA

Webinar key messages
summarised for you.

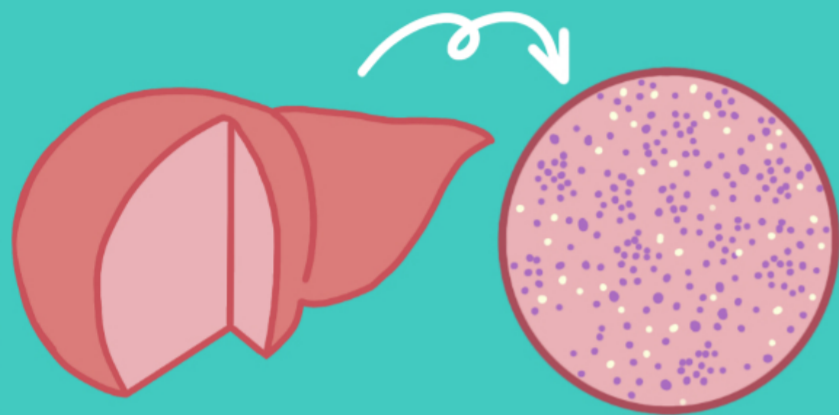


1

WHAT IS NON-ALCOHOLIC FATTY LIVER DISEASE?

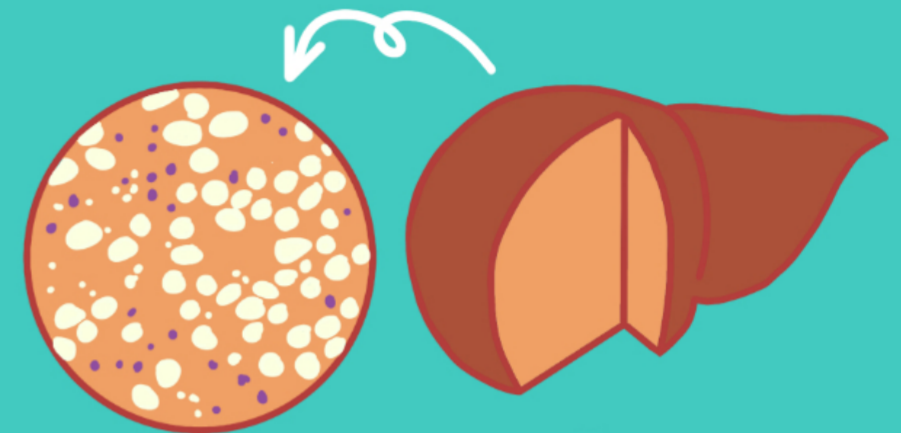


Liver disease is often associated with excess alcohol consumption, but many aren't aware of the long lasting effects poor diet can have on liver health.



HEALTHY LIVER

A healthy liver contains a little fat, but fatty liver disease occurs when the fat in the liver exceeds around 5.5%



FATTY LIVER

Non-alcoholic fatty liver disease (NAFLD) is a condition characterised by a build up of excessive fat in the liver.

NAFLD & OTHER CONDITIONS



Fat build up in the liver causes metabolic disturbances, which lead to the development of metabolic syndrome, type 2 diabetes (T2D) and an increased risk of cardiovascular disease (CVD).

BIDIRECTIONAL RISK FACTORS FOR NAFLD:

- Type 2 diabetes or prediabetes
- Blood pressure
- HDL Cholesterol triglycerides
- Obesity, ethnicity, sex, genetics
- Inflammation
- Insulin resistance
- Gut microbiota



PREVALENCE OF NAFLD

Most people are unaware of fat build up in their liver but up to 1 billion people worldwide are estimated to be affected by NAFLD.

NAFLD AFFECTS:

1 IN 3 people in the UK

1 IN 3 people in the US

1 IN 4 people in the Europe



There are currently no medications that can treat NAFLD, so patient must rely on lifestyle interventions alone.



WHAT CAUSES NAFLD?



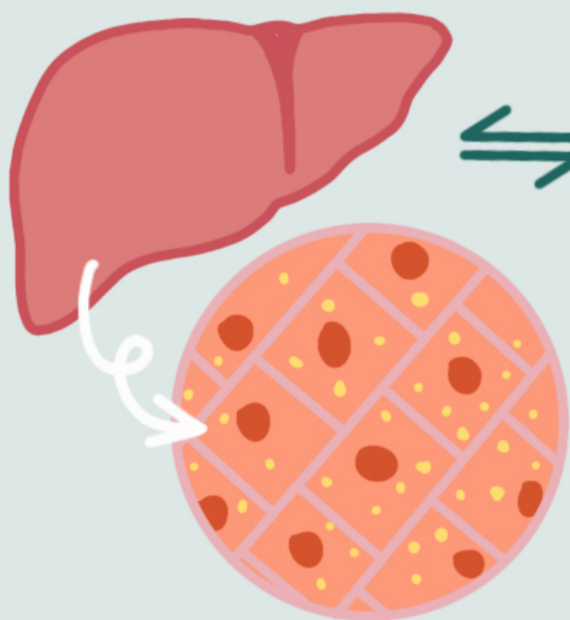
PATHOPHYSIOLOGY OF NAFLD

We only have a certain capacity to store fat in the adipose tissue in the body. Once this capacity has been reached, the dietary fat we consume will start to build up in our organs such as the liver. This is known as ectopic fat.

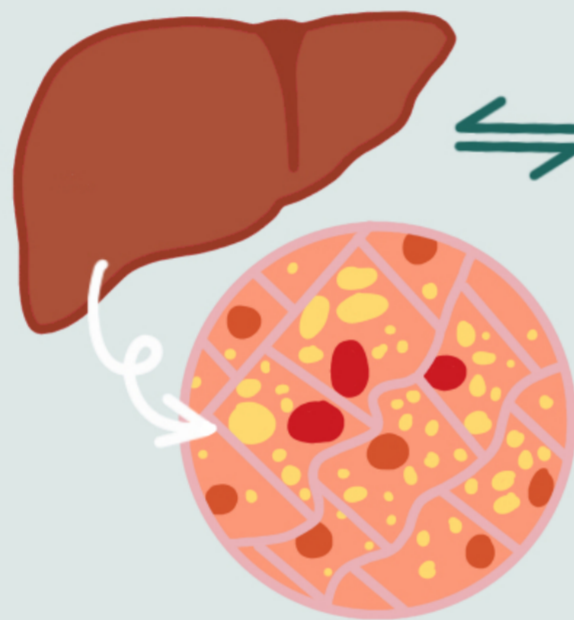
Higher ectopic fat is associated with lower insulin sensitivity (a marker for metabolic syndrome).

NAFLD and NASH are reversible but Cirrhosis is an irreversible scarring of the liver.

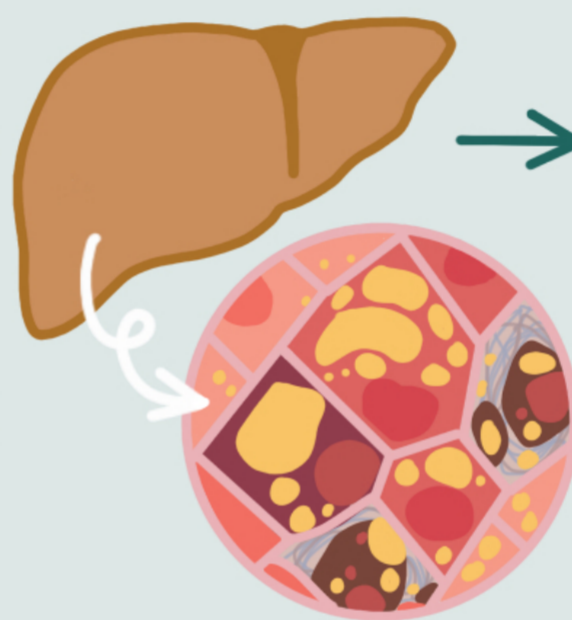
HEALTHY LIVER



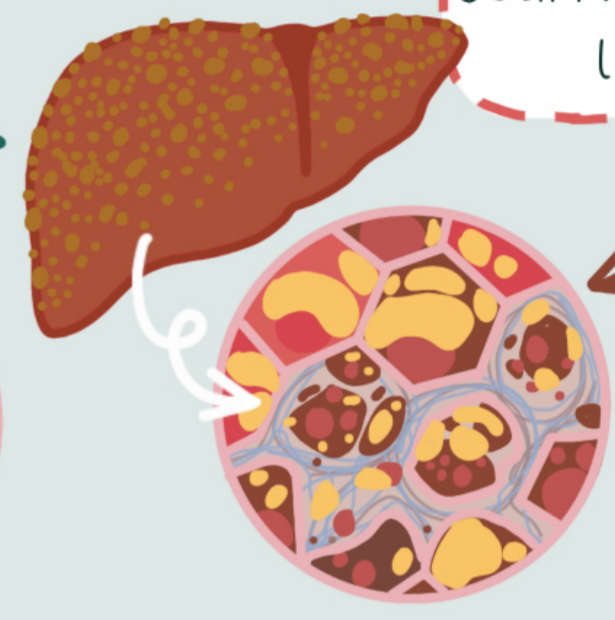
NAFLD



NASH



CIRRHOSIS

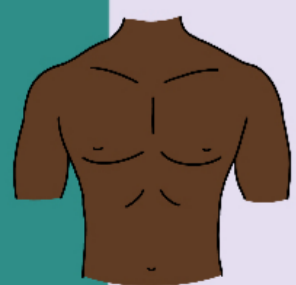


1 Obesity and insulin resistance is the first hit to the liver leading to NAFLD

2 Inflammation and oxidative stress is the second hit leading to non-alcoholic steatohepatitis (NASH) & eventually cirrhosis

OBESITY IS NOT THE ONLY RISK FACTOR...

A study found that lean individuals with insulin resistance had:



- ↑ 1.4 X higher percentage of liver fat
- ↑ 80% higher triglycerides
- ↓ 20% lower HDL cholesterol

3

WHAT ABOUT DIET?

Research has established a link between NAFLD and...

- ✓ Excessive caloric intake
- ✓ Consumption of fructose in excess of caloric needs
- ✓ Consumption of saturated fats

REVERSING NAFLD THROUGH DIETARY INTERVENTIONS



PRIMARY TREATMENT FOR NAFLD IS WEIGHT LOSS

For those living with overweight and obesity, weight loss is the primary goal in the reversal of NAFLD.

A study found that patients with a BMI of 30 who lost **8%** of their body weight saw dramatic reductions in liver fat, normalisation of blood sugar & a decrease in hepatic glucose production.

ADVICE FOR PREVENTION

1 WEIGHT MANAGEMENT IS KEY

2 LIMIT ENERGY DENSE FOODS CONTAINING SUGAR AND FRUCTOSE

3 AVOID SATURATED FATS AND OPT FOR UNSATURATED FATS (MUFA & PUFA)

THE ROLE OF A PLANT-BASED DIET

A plant-based diet has lots of associated health benefits, but research suggests it may play an important role in the reversal of NAFLD.

A randomised controlled trial looked at the effects of a low-fat vegan diet on the clinical markers of NAFLD, compared to a standard American diet.

Not only did the plant-based diet improve liver fat and insulin sensitivity, it also improved metabolism and energy balance.

RESULTS AFTER 16 WEEKS ON A VEGAN DIET:

- ✓ Participants lost around **14LB** of weight
- ✓ Liver fat decreased by **34%**
- ✓ Insulin resistance (HOMA-IR) decreased
- ✓ Thermic effect of food (energy expenditure from a meal) increased by **14%**

WHAT IS IT ABOUT A PLANT-BASED DIET?

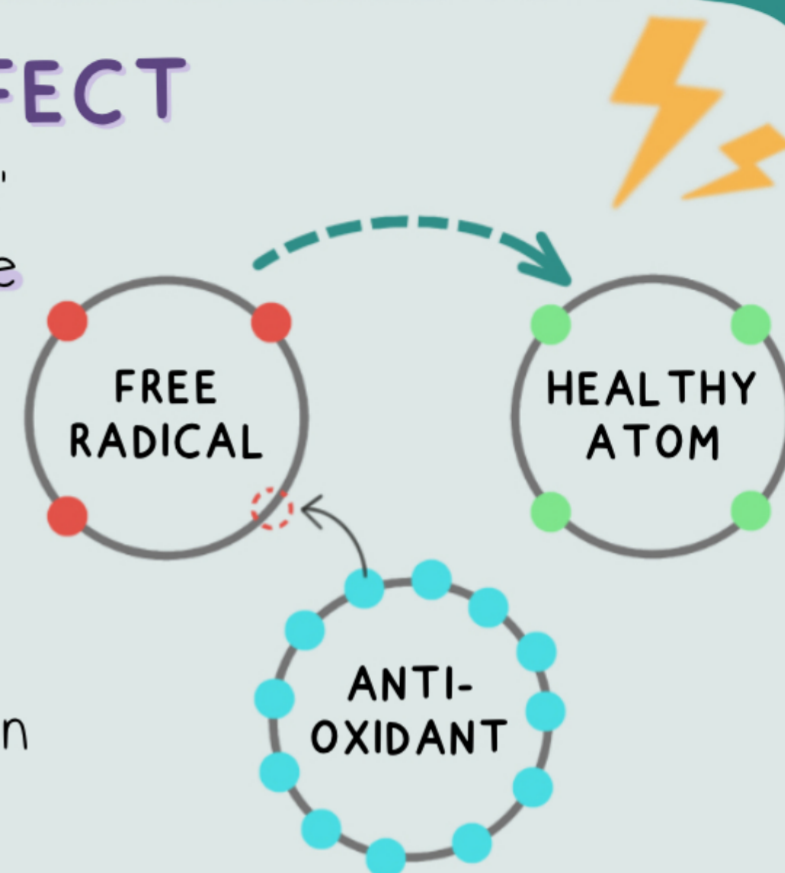


THE ANTIOXIDANT EFFECT

Oxidative stress is an imbalance between 'free radicals' and 'antioxidants' in the body. Free radicals are unstable atoms that are missing an electron. These atoms can cause harm in the body.

An antioxidant is an atom that is stable enough to donate an electron to the unstable free radicals. This has the power to neutralise it and reduce harm caused in the body.

In T2D and NAFLD the balance of free radicals and antioxidants is uneven, leading to oxidative stress which leads to insulin resistance.



ARE PLANTS A MAGIC PILL?

Since plant foods such as fruits and vegetables are so rich in antioxidants, could this be a magic pill for oxidative stress?

Research suggests that consuming a plant-based diet rich in fruits, vegetables, legumes and pulses could reduce oxidative stress in patients with T2D by providing a balance between free radicals and antioxidants.

HOW CAN A PLANT-BASED DIET HELP NAFLD?

- ✓ WEIGHT MANAGEMENT
- ✓ IMPROVE BLOOD LIPIDS
- ✓ IMPROVE INSULIN SENSITIVITY
- ✓ REDUCE OXIDATIVE STRESS
- ✓ REDUCE INFLAMMATION

RESEARCH ON INTERMITTENT FASTING & NAFLD



WHAT IS INTERMITTENT FASTING?

Intermittent fasting is an eating pattern that includes periods of eating and fasting. There are a number of different types of intermittent fasting, including the 5:2 diet.

"EAT BREAKFAST LIKE A KING, LUNCH LIKE A PRINCE AND DINNER LIKE A PAUPER"

DOES IT WORK?

Research conducted by Kahleova et al. found that eating two larger meals a day (breakfast & lunch) is more effective than six smaller meals for patients with T2D.

In this randomised, crossover study, patients were asked to follow two calorie restricted diets for 12 weeks each. The diets were calorie and macronutrient matched.

DIET 1: 2 LARGER MEALS	DIET 2: 6 SMALLER MEALS
Breakfast & lunch	Breakfast, lunch, dinner, supper & two snacks

ALIGNING OUR MEALS WITH THE CIRCADIAN RHYTHM MAY ALSO AID WEIGHT MANAGEMENT.

If feeding and fasting rhythms are misaligned with the central clock, it can lead to metabolic disturbances such as insulin resistance, glucose intolerance and an increased risk of weight gain.

EATING JUST BREAKFAST & LUNCH RESULTED IN:

- ✓ BIGGER DECREASE IN FASTING PLASMA GLUCOSE
- ✓ SIMILAR DECREASE IN HBA1C
- ✓ BIGGER DECREASE IN C-PEPTIDE
- ✓ MORE WEIGHT LOSS
- ✓ BIGGER DECREASE IN LIVER FAT
- ✓ HIGHER INCREASE IN INSULIN SENSITIVITY
- + A BIGGER DECREASE IN HUNGER & DEPRESSION SCORES!

