



DIETARY CARBOHYDRATE RESTRICTION AUGMENTS WEIGHT LOSS-INDUCED IMPROVEMENTS IN GLYCAEMIC CONTROL AND LIVER FAT IN INDIVIDUALS WITH TYPE 2 DIABETES: A RANDOMISED CONTROLLED TRIAL

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The carbohydrate restricted diet has been shown to be beneficial for Type 2 diabetes (T2D) management and reducing cardiovascular disease risk. This open-label, parallel randomised controlled trial involved Type 2 diabetic patients taking antidiabetic medications who restricted their energy intake by following either a carbohydrate-reduced high protein diet or a conventional diabetic diet. Participants in both groups had a 5.9% reduction in body weight, similar changes in fasting NEFA, apoB, apoA-1, total cholesterol, LDL-cholesterol, HDL-cholesterol, and non-HDL cholesterol, and a significant reduction in fasting glucose, insulin, C-peptide, and HOMA2-IR after 6 weeks of intervention. Carbohydrate-reduced high protein diet group showed a greater reduction in HbA1c and diurnal mean glucose, glycaemic variability, fasting triacylglycerol concentration and liver fat content. Carbohydrate-reduced high protein diet caused an adverse reaction in some patients, and those following a carbohydrate-reduced high protein diet excreted more urea than those eating a conventional diabetic diet. To confirm the results of this study, long-term robust studies are needed. This study can assist healthcare professionals in understanding the benefits of following a carbohydrate-reduced high protein diet in improving glycaemic control, triglyceride levels, and reducing body weight in Type 2 diabetes patients.

THE IMPACT OF MACRONUTRIENT INTAKE ON NON-ALCOHOLIC FATTY LIVER DISEASE (NAFLD): TOO MUCH FAT, TOO MUCH CARBOHYDRATE, OR JUST TOO MANY CALORIES?

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Non-alcoholic fatty liver disease (NAFLD) is a growing epidemic, in parallel with the obesity crisis. Diet and physical activity are important determinants of liver fat accumulation related to insulin resistance, dysfunctional adipose tissue, and secondary impaired lipid storage and/or increased lipolysis. While it is evident that a hypercaloric diet promotes liver fat accumulation, it is also clear that the macronutrient composition can modulate this risk. Although it is difficult to disentangle the effects of excess calories vs. specifically the individual effects of excessive carbohydrates and/or fats, isocaloric, and hypercaloric dietary intervention studies have been implemented to provide insight into the effects of different macronutrients, sub-types and their relative balance, on the regulation of liver fat. What has emerged is that different types of fat and carbohydrates differentially influence liver fat accumulation. Furthermore, distinct molecular and metabolic pathways mediate the effects of carbohydrates and fat intake on hepatic steatosis. Fat accumulation appears to act through impairments in lipid storage and/or increased lipolysis, whereas carbohydrate consumption has been shown to promote liver fat accumulation through de novo lipogenesis. Saturated fat and fructose induce the greatest increase in intrahepatic triglycerides (IHTG), insulin resistance. Decreased intake of saturated fats and fructose are therefore the two most important dietary interventions that can lead to a reduction in IHTG and potentially the associated risk of developing type 2 diabetes. A healthy and balanced diet and regular physical activity must remain the cornerstones of effective lifestyle intervention to prevent the development and progression of NAFLD. Considering the sub-type of each macronutrient, in addition to the quantity, are critical determinants of liver health.



EFFICACY OF A 2-MONTH VERY LOW-CALORIE KETOGENIC DIET (VLCKD) COMPARED TO A STANDARD LOW-CALORIE DIET IN REDUCING VISCERAL AND LIVER FAT ACCUMULATION IN PATIENTS WITH OBESITY.

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Excess fat in the liver, known as non-alcoholic fatty liver disease (NAFLD), has been shown to increase the risk of chronic diseases such as type 2 diabetes. Standard treatment regimens consist of low-calorie (LC) diets and exercise, however these may be ineffective at reversing fat accumulation in the liver. A very low-calorie ketogenic diet (VLCKD) has been proposed as an alternative treatment for NAFLD. This randomised control pilot study of 39 individuals with obesity aimed to compare LC diet and VLCKD on fat accumulation and indicators for NAFLD for two months. The results showed greater weight loss, abdominal fat reduction, liver fat reduction and improvements in liver function with VLCKD compared to the LC diet. Cholesterol was significantly reduced by both diets.

However liver stiffness remained unchanged.

The authors concluded that VLCKD was more successful at reducing liver fat and abdominal fat accumulation than current standard therapy and has the potential to improve NAFLD. Health care professionals could use this study to improve liver and abdominal fat loss in patients with obesity to improve NAFLD, when standard therapy has been inadequate.

NAFLD AND PHYSICAL EXERCISE: READY, STEADY, GO!

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Along with the increase in obesity and type 2 diabetes, the non-alcoholic fatty liver disease (NAFLD) incidence is escalating, thus becoming a leading cause of liver cirrhosis and a significant burden of liver-related outcomes. Since there is no pharmacotherapy available to address the NAFLD, the most effective solutions seem to be lifestyle changes centered on physical activity.

Exercise could mediate its beneficial effects directly on the liver and indirectly via extrahepatic pathways, forming a dose-response relationship with NAFLD in terms of prevalence and disease severity. Health-enhancing physical activity (HEPA) levels are mainly needed to exert beneficial effects in obese subjects, while even a small amount of exercise can be beneficial for lean individuals to prevent NAFLD.

This mini-review addresses three major points regarding physical activity and NAFLD: prevention, treatment, and extrahepatic benefits, offering recommendations on type and intensity of exercise in liver disease.

