



communicating Food for Health

Fructose Promotes Fatty Liver Accumulation

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The prevalence of nonalcoholic fatty liver disease (NAFLD) has been increasing in the USA and worldwide. NAFLD has increased dramatically in the USA and this increase has been closely associated with the increasing prevalence of obesity, the metabolic syndrome, and type 2 diabetes (1). It has been estimated that perhaps 20-30% of Americans now have NAFLD with the highest prevalence seen in Hispanic Americans (2). So while more and more people are developing NAFLD, most people with NAFLD are unaware they have this disease simply because in most people with NAFLD this disease produces no symptoms. This is similar to what we see with hypertension or high serum cholesterol levels, which in most people for many years produce no symptoms. However, in a significant minority of people with excessive fat deposits in their livers, this

can lead to liver inflammation and eventually the death of liver cells and the development of liver cirrhosis. So NAFLD along with excessive alcohol intake and viral hepatitis has become a major cause of cirrhosis and liver failure.

NAFLD and Foie Gras

Fatty livers are not unique to humans. It has been known for many years that force-feeding ducks and geese for several months causes them to develop fatty livers. The fatty livers of these domesticated birds are called foie gras and are considered a delicacy by French chefs (3). Those who watched the documentary "Supersize Me" starring filmmaker Morgan Spurlock may recall Mr. Spurlock in effect foie gras-ed his own liver in just 30 days simply by eating 3 meals daily at McDonalds and always choosing to "supersize" his meal if asked by the counter person if he'd like that "supersized" (4). His physician became alarmed by the in-

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“Isocaloric fructose restriction improved surrogate metabolic parameters in children with obesity and metabolic syndrome irrespective of weight change.”

crease in the levels of aminotransferases in his blood. Elevated aminotransferase levels are often an early warning sign that NAFLD is progressing to a more dangerous stage in which there is a markedly increased risk of developing both liver cancer and/or a cirrhotic liver.

It seems clear that NAFLD is largely being driven by excessive calorie intake and is often closely associated with the development of insulin resistance. Bariatric surgery that leads to significant weight loss is known to reverse fat accumulation in the liver and insulin resistance. A healthier diet and exercise program can improve insulin sensitivity and lead to weight loss and almost certainly will reverse the accumulation of fat in the liver. Indeed, Morgan Spurlock’s liver function appeared to return to normal shortly after he returned to his previously healthy diet and lost much of the excess weight he gained while filming “Supersize Me”. Exactly what it is about typical fast food fare that promotes insulin resistance, weight gain, and in many people NAFLD is still being debated. Calo-

rie-dense meals low in fiber and high in saturated fat, trans fat, and refined carbohydrates — especially when washed down with sugar-rich beverages — appear to be the most likely promoters of excessive calorie intake, insulin resistance, the metabolic syndrome, and NAFLD. A recent short-term study by Dr. Lustig in obese children fed them a diet where either 28% of the calories came from sugar or 10% of the calories came from sugar for 9 consecutive days. For 9 days, the majority of sugar calories were isocalorically replaced with more starch calories but other than that the experimental diet provided the same amounts of nutrients and the same total calorie levels as their usual baseline diet. Nevertheless, after just 9 days these 43 obese children saw a significant improvement in insulin sensitivity and reductions in serum triglyceride levels and more modest improvements in other parameters often associated with the development of type 2 DM, CVD, and NAFLD. The authors conclude: “Isocaloric fructose restriction improved surrogate metabolic parameters in

children with obesity and metabolic syndrome irrespective of weight change.” While this small study did not look at NAFLD, other research has suggested that a higher intake of refined sugars and especially fructose may well play an important role in promoting insulin resistance, perhaps in part by promoting excessive fat accumulation in liver cells (6).

Bottom Line: While more research is needed to clarify the relative risk of various components of a typical modern Western diet for promoting excessive calorie intake, insulin resistance, the metabolic syndrome, and NAFLD it is likely that replacing refined sugars high in fructose with whole grains and starchy vegetables and cutting back on foods high in saturated fat and trans fat and refined grains is likely to improve insulin sensitivity and curtail the accumulation of fat in the abdominal area and also in the liver.

Find references and more information on this topic at <https://foodandhealth.com/fructose-fatty-liver/>.

2015-2020 Dietary Guidelines for Americans: Resources You Can Use!

On January 7, 2016, the latest edition of the Dietary Guidelines for Americans was released. How will you use this information to help your clients live healthy and balanced lives?

There are lots of resources that accompany the Dietary Guidelines for Americans. Let's take a closer look at what materials have been released so far...

The Guidelines: You can access the actual 2015-2020 Dietary Guidelines for Americans at <http://health.gov/dietaryguidelines/2015/>.

There are 5 key guidelines, addressed over the course of 3 different chapters. Chapter 1 addresses elements of healthy eating patterns, and you can access it at <http://health.gov/>

[dietaryguidelines/2015/guidelines/chapter-1/](http://health.gov/dietaryguidelines/2015/guidelines/chapter-1/). Chapter 2 covers the shifts needed to align with healthy eating patterns. It's available at <http://health.gov/dietaryguidelines/2015/guidelines/chapter-2/>. Chapter 3 discusses how everyone has a role in supporting healthy eating patterns. Read it for yourself at <http://health.gov/dietaryguidelines/2015/guidelines/chapter-3/>.

In addition to those 3 chapters, there is also an executive summary (<http://health.gov/dietaryguidelines/2015/guidelines/executive-summary/>) and an introduction (<http://health.gov/dietaryguidelines/2015/guidelines/introduction/>).

Did you know that this round of guidelines comes with **14 appendices**? Of particular note are the sample eating patterns and physical activity guidelines. Explore these appendices at [\[lines/2015/guidelines/appendices/\]\(http://health.gov/dietaryguidelines/2015/guidelines/appendices/\).](http://health.gov/dietaryguide-</p></div><div data-bbox=)

But wait, there's more!

In addition to the guidelines and their appendices, there is also a fantastic **question and answer section** that covers an extensive range of topics. Access it at <http://health.gov/dietaryguidelines/2015/qanda.asp> and don't miss the closer look at the advisory committee itself.

There are more tools and resources coming soon, so be sure to check back at the page <http://health.gov/dietaryguidelines/2015/resources.asp> for the latest information.

And finally, if you're looking for even more about the Dietary Guidelines for Americans, remember to visit <https://foodandhealth.com>, where our team is already researching and exploring this edition.

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