

Caloric Sweetener Consumption and Dyslipidemia Among US Adults

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FROM ABSTRACT

Context

Dietary carbohydrates have been associated with dyslipidemia, a lipid profile known to increase cardiovascular disease risk.

Added sugars (caloric sweeteners used as ingredients in processed or prepared foods) are an increasing and potentially modifiable component in the US diet.

No known studies have examined the association between the consumption of added sugars and lipid measures.

Objective

To assess the association between consumption of added sugars and blood lipid levels in US adults.

Design, Setting, and Participants

Cross-sectional study among US adults (n=6,113) from the National Health and Nutrition Examination Survey (NHANES) 1999-2006.

Results

A mean of 15.8% of consumed calories was from added sugars.

Conclusion

In this study, there was a statistically significant correlation between dietary added sugars and blood lipid levels among US adults.

KEY POINTS FROM ARTICLE:

- 1) It has been known for some time that carbohydrates can increase the risk of cardiovascular disease by adversely altering lipid profiles.
- 2) Increased carbohydrate [sugar] consumption is associated with lower high-density lipoprotein cholesterol (HDL-C) [good] levels, higher triglyceride levels, and higher low-density lipoprotein cholesterol (LDL-C) [bad] levels. These three lipid profile characteristics are associated with cardiovascular disease risk.

- 3) Dyslipidemia is characterized by 3 lipid abnormalities:
 - A)) Elevated triglyceride levels.
 - B)) Elevated levels of small LDL-C particles.
 - C)) Reduced HDL-C levels.
- 4) In the US, consumption of sugar has increased substantially in recent decades, primarily from increased intake of "added sugars." Added sugars are used by the food industry as "ingredients in processed or prepared foods to increase the desirability of these foods." The most commonly consumed added sugars are refined beet or cane sugar and high-fructose corn syrup.
- 5) "Consumption of foods high in added sugars has been associated with increased obesity, diabetes, and dental caries and with decreased diet quality."
- 6) The American Heart Association advises limiting added sugars to fewer than 100 calories daily for women and 150 calories daily for men (approximately 5% of total energy).
- 7) Although fruits and vegetables contain carbohydrates, they also contain many other nutrients. Added sugars contribute no nutrients other than energy.

IN THIS STUDY

- 8) Weight increase over the previous year was greater among those consuming more added sugars.
- 9) "Daily consumption of added sugars averaged 89.8 g (21.4 tsp [359 kcal]). This represents 15.8% of total daily caloric intake and 30.7% of total carbohydrate intake."
- 10) In 1977, added sugars represented 10.6% of the calories consumed by adults; in this study, 15.8% of daily calories were from added sugars. This represents a "substantial increase."
- 11) "Increased added sugars are associated with important cardiovascular disease risk factors, including lower HDL-C levels, higher triglyceride levels, and higher ratios of triglycerides to HDL-C."
- 12) These authors suggest that the obesity and increased cardiovascular risk factors associated with consumption are linked specifically to fructose, for these reasons:
 - A)) Fructose is found in large quantities in nearly all added sugars.
 - B)) Fructose increases lipogenesis and hepatic triglyceride synthesis in the liver.
 - C)) Fructose decreases the peripheral clearance of lipids.

13) Recommendations to reduce cardiovascular disease risk usually promote a diet low in fat and cholesterol. However, such a diet appears to increase the consumption of refined carbohydrates. Refined carbohydrate added sugar consumption appears to have a role in increasing risk of chronic disease, including adverse cardiovascular lipid profiles.

CONCLUSIONS FROM AUTHORS

14) "Higher consumption of added sugars is associated with several important measures of dyslipidemia, an important risk factor for cardiovascular disease among US adults."

15) In this study, there was a statistically significant correlation between dietary added sugars and elevated adverse blood lipid levels among US adults.

COMMENT FROM DAN MURPHY

Most of the cholesterol in one's blood (probably 75-90%) is not from the diet; rather, it is made in one's liver. Any standard biochemistry book will show that the liver makes cholesterol from sugar. Therefore, it is not surprising that increased consumption of added sugars raises blood cholesterol and lipids. Conversely, reduction of the consumption of added sugars has been shown to lower blood cholesterol and lipids.