

The atherogenic potential of dietary carbohydrate

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Kopp W.

Source

Univ. Doz. Dr. Wolfgang Kopp, Diagnostikzentrum Graz,
Mariatrosterstrasse 41, A-8043 Graz, Austria. wk@dzg.at

Abstract

OBJECTIVE:

To investigate the role of dietary carbohydrate in atherogenesis.

METHOD:

Search of the literature for relevant papers concerning the relationship of insulin/hyperinsulinemia and carbohydrate on the one hand, and the renin-angiotensin system, the sympathetic nervous system, growth factors, i.e. platelet-derived growth factor and insulin-like growth factor-I, C-reactive protein, and dyslipemia, on the other hand, factors well known to be involved in the atherogenic process, as well as for epidemiologic studies investigating the relationship between high-carbohydrate diets and the development of cardiovascular disease.

RESULTS:

High-carbohydrate nutrition is shown to have the ability to induce vascular inflammation and plaque formation through an insulin-mediated activation of the RAS, growth factors, cytokines, the SNS, and C-reactive protein and to cause an atherogenic lipid profile in normal humans. Epidemiologic studies as well as studies in experimental animals corroborate an important role of dietary carbohydrate in atherogenesis.

CONCLUSION:

High-carbohydrate diets, particularly in the form of high-glycemic index carbohydrate, have the ability to directly induce atherosclerosis. Based on anthropologic facts, the reason for these dietary-induced, insulin-mediated, atherogenic metabolic perturbations are suggested to be an insufficient adaptation to starch and sugars during human evolution. Restriction of insulinogenic food (starch and sugars) may help to prevent the development of atherosclerosis, one of the most common and costliest human diseases.