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Health effects of trans fatty acids.

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Abstract

trans Fatty acids are formed during the process of partial hydrogenation in which liquid vegetable oils are converted to margarine and vegetable shortening. Concern has existed that this process may have adverse consequences because natural essential fatty acids are destroyed and the new artificial isomers are structurally similar to saturated fats, lack the essential metabolic activity of the parent compounds, and inhibit the enzymatic desaturation of linoleic and linolenic acid. I the past 5 y a series of metabolic studies has provided unequivocal evidence that trans fatty acids increase plasma concentrations of low-density-lipoprotein cholesterol and reduce concentrations of high-density-lipoprotein (HDL) cholesterol relative to the parent natural fat. In these same studies, trans fatty acids increased the plasma ratio of total to HDL cholesterol nearly twofold compared with saturated fats. On the basis of these metabolic effects and the known relation of blood lipid concentrations to risk of coronary artery disease, we estimate conservatively that 30,000 premature deaths/y in the United States are attributable to consumption of trans fatty acids. Epidemiologic studies, although not conclusive on their own, are consistent with adverse effects of this magnitude or even larger. Because there are no know nutritional benefits of trans fatty acids and clear adverse metabolic consequences exist, prudent public policy would dictate that their consumption be minimized and that information on the trans fatty acid content of foods be available to consumers.

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