

## Issue 97

### In a nutshell

Results from the epidemiological Zutphen Elderly study show that a high intake of trans fatty acids is associated with higher LDL cholesterol levels.

Dietary advice on fats should aim for an appropriate level of monounsaturated and omega:3 fatty acids.

## Trans fatty acids and heart disease

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## NUTRITION RESEARCH REVIEW

### Study: Trans fatty acid intake and CHD

Higher intake of trans fatty acid (TFA) is associated with increased risk of coronary heart disease (CHD) over a 10 year period, according to the results of a long term Dutch study published three months ago.

**Subjects:** 667 older men from the Zutphen Elderly Study (aged 64-84 years) without coronary heart disease when the study began.

**Method:** Prospective study comparing dietary intake (established by questionnaire) with incidence of coronary heart disease over the 10 years of follow-up.

**Results:** Higher TFA intake in 1985 was associated with greater risk of CHD over the next 10 years.

After adjustment for age, BMI and other dietary factors, the relative risk of CHD from each additional 2% of energy intake from trans fatty acid was 1.28 (95% CI:

1.01-1.61).

The men in the highest third of TFA intake had twice the risk of CHD compared with those in the lowest third of TFA intake ( $p < 0.03$ ).

Reference: Oomen CM et al. Association between trans fatty acid intake and 10-year risk of coronary heart disease in the Zutphen Elderly Study: a prospective population-based study *Lancet*. 2001;357:746-51

## Comments

For nearly 20 years nutritionists have debated whether the increased intake of TFA is harmful to cardiovascular health or not. Higher TFA intake largely comes from the widespread use of margarine and other partly hydrogenated vegetable oils in Western societies.

These foods became popular in large part due to the recommendations of nutrition and public health experts seeking to reduce the risk of heart disease, for example by substituting margarine for butter, so as to lower the intake of saturated fat.

If it turns out that these changes actually increase the risk of CHD, this would be a serious matter. It has the potential to diminish the credibility of nutrition experts in the minds of primary care doctors and the public.

These new results from the Zutphen Elderly Study suggest that there is a relationship between TFA intake and CHD.

But it is worth bearing in mind that the sample was not large by epidemiological standards, and that the subjects consumed quite large amounts of TFA compared with other Western countries. These reasons may help explain why not all studies have found the same result.

For example a case-control study from Scotland in the mid 1990's found no significant such relationship <sup>1</sup> An American study published in 1997 found only a modest relationship between margarine intake and CHD in men, and no relationship at all between CHD and butter intake <sup>2</sup> Taking the results of the whole body of research, however, it does seem that there is some relationship

between TFA and CHD. One thing that is reasonably clear is that a high intake of TFA increases LDL levels and thus decreases the HDL:total cholesterol ratio. This is a known CHD risk factor.

Perhaps we should not be surprised at this. Any public health dietary advice which results in such a significant alteration of the 'normal' balance between the fatty acid types and between fat and antioxidant intake, is likely to cause some problems.

For the practising clinician, a fair conclusion based on the current state of knowledge would be to encourage patients to consume a balanced fat intake. This should include plenty of monounsaturated fats (e.g. from olive oil and now found in some of the newer types of margarine containing canola oil), as well as omega:3 oils (e.g. from fish).

As well, our patients should be advised to consume generous amounts of antioxidant nutrients in their diet (e.g. vitamin E and flavonoid-containing foods such as vegetables, fruits, tea and wine). Interestingly, it was the same Zutphen Elderly Study sample that researchers demonstrated the relationship between such antioxidants and CHD in a paper published nearly 8 years ago <sup>3</sup> !

### Reference:

1. Bolton-Smith C et al. Does dietary trans fatty acid intake relate to the prevalence of coronary heart disease in Scotland? *Eur Heart J* 1996;17:837-45
2. Gillman MW et al. Margarine intake and subsequent coronary heart disease in men. *Epidemiology* 1997;8:144-9
3. Hertog MG et al. Dietary antioxidant flavonoids and risk of coronary heart disease: the Zutphen Elderly Study. *Lancet* 1993;342:1007-11

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