



## Letter to the Editor

# The Diet from the North: a new paradigm of a healthy dietary pattern?

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In a recent issue of the *British Journal of Nutrition*, Kanerva *et al.*<sup>(1)</sup> published a meta-analysis of three Finnish studies with the objective to examine the association between a healthy Nordic diet and cardiometabolic risk factors.

As the authors have noted in the paper, their results are controversial. They appraised adherence to a healthy Nordic diet using the Baltic Sea Diet Score<sup>(2)</sup>. They found an inverse association with inflammatory status as measured by high-sensitivity C-reactive protein levels. However, they also unexpectedly found that women with the best adherence level exhibited higher probability of lowered HDL-cholesterol concentration than those with the lowest adherence level (fifth *v.* first quintile of the Baltic Sea Diet Score: OR 1.67, 95% CI 1.12, 2.48). This adverse effect on blood lipid levels can be translated to a detrimental effect on cardiovascular clinical outcomes.

It is true that these results are based on three cross-sectional studies, and, therefore, the inherent limitations of their methodology may hamper the conclusions. The authors have also suggested several possible reasons for this unexpected result, such as the low or moderate intake of alcohol, the high intake of cereals and low-fat milk, the characteristics of the Baltic Sea Diet Score, the low intake of total fat (although participants in the highest quintile had 29.5% of total energy from fat), or even the reliability of HDL-cholesterol assays. However, at least the results are somehow intriguing. Previous findings on this issue are not consistent<sup>(3–5)</sup>.

A healthy dietary pattern based on Nordic foods has received several names such as 'healthy Nordic diet', 'Baltic Sea diet' and 'New Nordic Diet'. Behind all of them, there is the concept of the change of the usual diet followed-up by the population towards a new healthy dietary pattern using those foods naturally grown in the Nordic countries, for example, apples and berries, rye, rapeseed oil, salmon, roots, cabbages, peas, and dairy products<sup>(6)</sup>. The consumption of whole-grain products, a salient characteristic of this dietary pattern, has been associated with a lower risk of type 2 diabetes, the metabolic syndrome and CVD in different populations<sup>(7–9)</sup>. The consumption of fish, especially fatty fish, another component of this dietary pattern, has been linked to the prevention of chronic diseases due to lower inflammatory processes<sup>(10)</sup>. Phenolic compounds present in berries have been suggested to act as a protective factor against inflammatory diseases including CVD<sup>(11)</sup>. Indeed, according

to the NORDIET randomised controlled trial<sup>(3)</sup>, a healthy Nordic diet improved lipid profiles and insulin sensitivity and decreased body weight and blood pressure in eighty-eight Swedish hypercholesterolaemic subjects. These results are in agreement with those of a controlled study conducted in 131 pre-diabetic Finnish participants suggesting an improved glucose metabolism<sup>(12)</sup> and a reduction in inflammatory and endothelial function markers<sup>(13)</sup> in subjects allocated to a Nordic diet rich in whole grains, fish and bilberries in the Sysdimet Study. More recently, a randomised control trial of 181 centrally obese Danish individuals has shown that a healthy Nordic diet is associated with weight loss and blood pressure reduction<sup>(14)</sup>. However, because of the novelty of this dietary pattern, the available scientific evidence for its effectiveness on disease prevention is still relatively sparse. By contrast, in this context, the Mediterranean dietary pattern has a strong background of a millenary tradition with no evidence of harm, with a demonstrated protective effect against clinical cardiovascular events based on a large randomised clinical trial<sup>(15,16)</sup>.

A second caveat is the problem of mercury-contaminated fish, especially fatty fish that is as frequently consumed as those in the Nordic countries, *i.e.* salmon and mackerel. Although the review conducted by Mozaffarian & Rimm<sup>(17)</sup> concluded that the benefits of fish consumption outweigh the potential risks associated with mercury contamination, these results are 8 years old and the level of pollution may have changed since then.

A third issue is the problem of the compliance with the diet. A recently published study by Poulsen *et al.*<sup>(18)</sup>, based on the follow-up of 147 participants from an early intervention with the New Nordic Diet with the aim to investigate the potential of this dietary pattern for disease prevention (weight gain and blood pressure) among free-living people, has found a decrease in compliance after the intervention. Is this sub-optimal compliance related to suboptimal palatability?

According to the authors, one of the potential explanations for this finding is the fact that some New Nordic Diet foods such as plants and mushrooms might be difficult to find in general grocery stores, and some other foods such as meats from free-range livestock and game might be more expensive than traditional foods. Could this new dietary pattern paradigm be too utopic and not totally feasible?

In contrast, the Nordic diet has sound advantages. It has been suggested that the adoption of a dietary pattern from another region with differences in food cultures is not easy<sup>(19)</sup>. In addition, from an economic and ecological point of view, there are reasons to support that the consumption of local foods should be promoted<sup>(20)</sup>. Insofar as balanced dietary pattern is followed to meet all the macronutrient and micronutrient requirements, one of the healthiest approaches is to eat local and seasonal products.

Future large and well-conducted cohort studies, with appropriate control for confounding factors, and randomised trials will tell us whether the healthy Nordic diet is a useful tool to prevent cardiovascular events among Nordic populations. Meanwhile, it seems more reasonable to export the promotion of a palatable diet from a millenary tradition with health-protective effects based on solid scientific results<sup>(15,21,22)</sup>.

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