

Issue 52 In a nutshell

Several new randomised trials which involved switching to a different dietary pattern for a year or more have produced promising results in relation to cancer, mortality and rheumatoid arthritis.

Trials using dietary patterns are hard to do, but are important if we are to base 'clinical advice on whole diets'.

Major dietary change: clinical trials

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NUTRITION RESEARCH REVIEW

Study 1: Mediterranean diet and cancer

A randomised clinical trial from France has confirmed that changing to a 'Mediterranean diet' is protective against the development of cancer and increases longevity.

The trial was conducted as part of the Lyon Diet Heart Study in 605 subjects with coronary heart disease. They were randomised to follow either a, Mediterranean-type diet, or a control diet.

The Mediterranean diet consisted of more cereals and legumes, fish, fresh fruit and vegetables; as well as less delicatessen food, meat (beef and pork), butter and cream (replaced with an experimental canola oil-based margarine). Canola and olive oils were used for cooking .

The control diet was similar to the step 1 American Heart Association prudent diet (30% of energy from fat). Follow-up was over 4 years.

Major results are summarised in the Table.

The main differences in nutritional status in the Mediterranean diet subjects (compared with controls) included: higher intakes of fiber, vitamin C, oleic acid and omega-3 fatty acids, as well as lower intake of cholesterol, saturated and polyunsaturated fats.

In plasma assays, Mediterranean diet subjects had higher levels of vitamins C and E ($p < .05$) and omega-3 fatty acids ($p < 0.001$), together with lower levels of omega-6 fatty acids ($p < 0.001$).

Ref: *Arch Intern Med.* 1998;158:1181-1187

Table: Risk ratios for Mediterranean diet compared with control diet

Outcome	Risk ratio	(95% CI)	Signif.
Cancers	0.39	(0.15-1.01)	p=0.05
Total death	0.44	(0.21-0.94)	p=0.03
Cardiac death	0.35	(0.15-0.83)	p=0.01

Study 2: Vegan diet and rheumatoid arthritis

An uncooked vegan diet rich in lactobacilli may help patients with rheumatoid arthritis (RA), although it is so unpalatable to many patients that a high proportion will drop out. These are the results from a recent Finnish study.

Patients with RA were randomised into either diet or control groups. The vegan diet group experienced subjective relief of rheumatic symptoms, with a return of symptoms when they resumed their normal diet. However, half the diet patients had adverse effects (e.g. nausea, diarrhoea) and stopped prematurely.

Regression analysis showed an association between decrease in the disease activity score and lactobacilli-rich and chlorophyll-rich drinks, as well as increase in fibre intake.

Ref: *Br J Rheumatol* 1998 37:274-81

Study 3: lactovegetarian diet and cancer

Switching to a lacto-vegetarian diet is associated with reduced cancer mutagenic activity, and the effect reverses when omnivore diet is resumed, according to the results of a Swedish study.

Twenty healthy, non-smoking subjects were followed before, during and after a 12 month switch to a vegetarian diet, and again three years after resuming a

meat-containing diet.

Mutagenic activity in urine and faeces decreased after adopting the vegetarian diet, and increased again (in faeces) after return to a mixed diet ($p = 0.025$ and 0.035 respectively when comparing the diets).

Ref: Mutagenesis 1998;13:167-71

Comments

One of the harder things to do in nutrition science is to mount a quality trial of a whole dietary pattern, as distinct from a specific dietary change. Such attempts usually run into problems with compliance, and with defining the scope of the diet.

However, the authors of these three papers have all attempted to conduct randomised controlled trials involving ambitious dietary change.

The first study has confirmed benefits of a Mediterranean-style diet which have already been found in epidemiological studies. There have also been a number of short term studies highlighting the cardiovascular benefits.

But without this kind of longer term whole-diet controlled trial, physicians will face problems in translating nutrition science into concrete advice for their patients. In particular :

1. What exactly is the diet ? Or to put it another way, what components of the dietary lifestyle are the essential elements required to get the health benefits?

The so-called "Mediterranean diet" , for example, might encompass any or all of lower intake of animal fat, more fruit and vegetables, different types of oils and different cooking methods (not to mention Italian or Greek cuisine!)

2. Is there enough evidence from clinical trials that the effort will actually be worth it, in terms of specific health benefit, and are there any 'side-effects'?

The Lyons study, which had previously reported positive results for heart disease, now suggests that patients (in this case those with heart disease) who switch to a Mediterranean diet will gain some protection from cancer and death. This is particularly

significant given that the comparison diet was prudent, moderately low fat.

Not unexpectedly, the nutritional analysis suggested that the most likely causes of this protection were a combination of fat intake (including saturation, cholesterol, and omega3:6 ratios), fibre and antioxidant nutrients.

The second study addresses a hypothesis that comes more from alternative than orthodox medicine. This is that a strict, raw-food vegan diet can help patients with rheumatoid arthritis.

The study confirms that there may well be a benefit, but also highlights how difficult it is to make such an extreme dietary change long term. This must be considered a side-effect of dietary change, and although not all dietary change is as extreme as this one, the 'cost' of dietary modification is not always taken into account in nutrition research.

The third study is interesting in that it follows a cohort of omnivore volunteers through a 12 month trial of lactovegetarian diet, and then back again to their prior meat eating habits. It found that the cancer mutagen activity tracks these dietary changes.

This adds to our understanding and the epidemiological evidence that vegetarians have lower rates of cancer. Unfortunately, like so many other studies of vegetarian diet, the authors were not able to conclude which aspect of the vegetarian change was responsible for this effect.

Clearly conducting controlled long-term clinical trials of whole diets is not an easy task. But these three studies are all good examples of how important it is to do it none the less.

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