Commentary: Is olive oil a key ingredient in the Mediterranean recipe for health?

AR Ness

There is no single Mediterranean diet. The traditional diets of the countries surrounding the Mediterranean, however, share a number of common features. They are (or were) plant-based with olive oil as the principal fat. These diets appear to be healthful. The Seven Countries study showed that Mediterranean populations studied in the 1960s and 1970s had low rates of death attributed to coronary heart disease and low rates of death from all causes in middle age. Furthermore, the favourable health experience of Greek migrants to Australia and the declines in death rates attributed to coronary disease in many Mediterranean countries in the face of a less traditional diet suggest that it may even be possible to improve on this tried and tested cultural recipe for health.

The challenge is to tease out (if possible) the healthful features of the Mediterranean diets. This is important for several reasons. First, while some of us have sufficient resources to eat more Mediterranean diets there are concerns that many who are less privileged do not. Second, the widespread adoption of Mediterranean diets (and how far this can be altered to take account of what can be grown locally) has implications for agriculture and for the environment. Thus, to inform individual choices and policy formulation, it is important to try and unpick the Mediterranean advantage.

The study by Fernández-Jarne and colleagues represents an attempt to do just this. They report a hospital-based case-control study of 171 cases of first acute myocardial infarction and age- and sex-matched controls they carried out in a Spanish population to examine the association with olive oil intake. There was marked heterogeneity of olive oil consumption—54 g per day in the top quintile versus 7 g per day in the bottom quintile in the controls. While those controls in the top quintile for olive oil consumption were more likely to be married, to eat a more plant-based diet and consume more alcohol they were also more likely to smoke and to be diabetic. After adjustment for a number of confounders the odds ratio in the top quintile was 0.18 (95% CI: 0.05–0.63). Though the test for trend was statistically significant (P = 0.03) there was no clear dose response. This study was small and these findings are not consistent with the results of other studies in Mediterranean populations. A case-control study in Italian women found no association with olive oil consumption and a case-control study in Greece found no association with monounsaturated fat intake. Nevertheless, it does raise the possibility that olive oil is a particularly important component of the Mediterranean diet. While cohort studies such as the European Prospective Investigation into Cancer (EPIC) may be able to confirm this observational association exists in prospectively collected data, ultimately trials will be required to establish whether an important causal relationship exists.

Though there have been no large trials of olive oil supplementation specifically there are several other trials that have tested various aspects of Mediterranean diets. One secondary prevention trial of advice to eat a more Mediterranean diet was carried out in France. In this trial 605 middle-aged people with a recent myocardial infarction were randomized to receive advice to eat a Mediterranean diet (more bread, more vegetables, more fruit, more fish, and less meat), and to replace butter and cream with rapeseed margarine. After 27 months the trial was stopped prematurely because of better outcomes in the intervention group. There were 20 deaths in the control group and 8 in the intervention group. The adjusted risk of death from all causes was 0.30 (95% CI: 0.11–0.82). These findings have not been replicated.

Traditional Mediterranean diets contain modest amounts of fish. Two large trials of advice to eat more fish or fish oil supplements (and thus more n-3 fatty acids) have reported a reduced risk of all-cause mortality in people with existing coronary heart disease. The pooled rate ratio for dietary fish or fish oil on total mortality based largely on the results of these two trials was 0.83 (95% CI: 0.73–0.94, with no significant heterogeneity). A long-term follow-up of the Diet and Re-infarction Trial (DART1), however, failed to show any substantial long-term survival benefit. Furthermore, the results of a large randomized trial of fish advice in men with angina, the Diet and Angina Randomised Trial (DART2), are not consistent with the results from these previous trials.

The Mediterranean diets being plant-based are rich in antioxidants. The results of trials of antioxidant supplementation (such as β-carotene, vitamin E and vitamin C) have, however, been disappointingly null.

In conclusion, a more profitable epidemiological approach to exploring the Mediterranean advantage may be to move away from constituent-based analyses and experiments and to carry out food-based analyses (such as the one reported by Fernández-Jarne and colleagues) in the first instance and to follow these up with trials of whole food modification or dietary advice.

References


23 Knietowicz Z. Statins are the new aspirin, Oxford researchers say. BMJ 2001;323:1145.

The bark of a 600 year old olive tree. Photography: Mary Shaw