Letters

Coffee drinking and risk of coronary heart disease

Cholesterol concentrations may have been within natural fluctuations

Editor–Rob Urgert and colleagues compared the effects of filtered and cafetière coffee on blood lipid concentrations and found that "After 24 weeks low density lipoprotein cholesterol concentrations were raised by 0.26 (SE 0.11) mmol/l, or 9% over baseline values relative to filtered coffee (P=0.03)." I am sceptical about the biological importance of differences with P values of this order; nor can we rule out the possibility that, had the experiment continued for longer, the plasma cholesterol concentration in the cafetière group might have returned to around the baseline value.

During the follow up the plasma cholesterol concentration rose to considerably above the baseline value (5.25 *v* 4.99 mmol/l) in the group who had previously drunk filtered coffee, although no statistical analyses are presented. The value of 5.25 mmol/l was higher than that in the cafetière group at the end of the treatment period (5.16 mmol/l), which the authors regarded as considerably raised. During follow up the cholesterol concentrations in the group that had previously consumed cafetière coffee fell below the baseline value (4.91 mmol/l) to 4.88 mmol/l. A reasonable interpretation is that the changes are within the natural fluctuations in blood cholesterol concentration over time. Plasma cholesterol concentration varies diurnally, seasonally, and under stress. Average monthly differences may range from 8% to 20% in groups of people and up to 67% in individuals.

The coffee used in this study was exceptionally strong. Participants consumed the equivalent of 10 or more average sized cups daily of a strength unlikely to be consumed in Britain. This study needs to be viewed alongside the results of several epidemiological studies showing that coffee drinking is associated with no significant risk of coronary heart disease or even a lower risk than that among people who drank no coffee at all.

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Authors' reply

Editor–M I Gurr asks whether the blood cholesterol concentrations in our subjects drinking cafetière coffee could have returned to the baseline value if treatment had lasted longer than six months. This is unlikely: the 6% increase that had persisted after half a year of drinking cafetière coffee is similar to that found in observational studies in which lifelong consumers of boiled coffee were compared with people who drank filtered coffee. A permanent increase in blood cholesterol concentration of this magnitude will increase the risk of heart disease by 12% or more. Both the P value for the effect and the consistent cholesterol raising effect in all the experiments that have studied the responsible substance, cafestol, make it improbable that the observed rise in blood cholesterol with cafetière coffee was due to chance.

In the follow up period cholesterol concentrations in the group who had consumed cafetière coffee fell below those in the group who had consumed filtered coffee. By comparing absolute values in the two groups at different time points Gurr argues that these changes are natural fluctuations over time. The only valid way to evaluate the results of a controlled trial, however, is to compare the changes from the baseline value in the treatment group with the concurrent changes in the control group. This will eliminate the effect of fluctuations–such as those caused by seasonality, which in a randomised trial will affect both groups to a similar extent–and gives the true effect of a treatment.

Although we agree with Gurr that our subjects used stronger coffee than is common in Britain, we do not see how this relates to Gurr's doubts about a link between coffee and heart disease. Gurr refers to studies in the United States and Scotland, where most people drink filtered or instant coffee. Absence of an effect of filtered or instant coffee on coronary risk is to be expected: these types of coffee do not contain cafestol and thus do not affect the metabolism of cholesterol. In contrast, a longitudinal study in a population with a high intake of boiled coffee did show a positive association between coffee and coronary mortality. Again, this was to be expected: boiled coffee is rich in cafestol and increases blood cholesterol concentration long term in lifelong consumers. Our study shows that similar effects are to be expected with cafetière coffee.

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