Is it the drink or the drinker? Circumstantial evidence only raises a probability\textsuperscript{1,2}

Arthur L Klatsky

Many scientists accept the hypothesis that lower coronary heart disease (CHD) risk among light drinkers, compared with abstainers, represents a causal protective effect of alcohol. The data support most of the usual criteria for causality (1–3). The consistency of the alcohol-CHD relation exists in case-control and prospective population studies in various countries, several racial groups, and both sexes, and appropriate temporal sequence shown by the prospective population studies. Substantial data provide evidence for biological plausibility via increased HDL cholesterol in alcohol drinkers and, less convincingly, by evidence for antithrombotic effects of alcohol. Total independence from confounders cannot be established in observational data. Furthermore, no apparent indirect explanation has emerged from studies in which known CHD risk traits, former drinking, baseline CHD, and diet were controlled for. Relative specificity is a strong point for causality; because CHD stands almost alone in its inverse relation to lighter drinking, it is unlikely that the increased risk of nondrinkers represents a general predilection for serious illness.

One current subject of debate is the possible relative differences in benefit derived from specific alcoholic beverage types. International comparisons show lower CHD risk in wine-drinking countries, suggesting that wine may be more protective than liquor or beer (4, 5). France, in particular, has lower CHD mortality than predicted by the CHD risk factor prevalence in that country, leading to the “French paradox.” These studies are valuable and provocative, but have problems in interpretation (5). First, the drinking pattern is not evident. Binge drinking may attenuate alcohol’s protective effect against coronary artery disease (3), whereas ingesting alcohol slowly with food (more usual with wine and, possibly, beer) may have more benefit. Second, in some countries a small proportion of persons may drink large amounts of a particular beverage type, making mean consumption misleading and socioeconomic status and a presumed proxy for healthy lifestyle habits (2, 3, 5).

Reports of antioxidants, endothelial relaxant activity, and antithrombotic activity support interest in possible beneficial nonalcoholic components in wine, especially red (2, 3, 5, 6). Beer contains similar polyphenolic substances in lower concentrations than wine and in variable amounts (6). Although inhibition of oxidative modification of LDL cholesterol is probably antiatherogenic and diets high in antioxidants seem protective against CHD (7), prospective clinical trials of antioxidant supplements remain inconclusive, with the possible exception of vitamin E (7, 8).

Prospective population studies, provide no consensus about a role for beverage choice, with apparently similar CHD protection from drinking beer, wine, or liquor (2, 3, 5, 6). Those studies with relevant data show that statistically significant inverse relations to CHD morbidity and mortality for beer, liquor, or wine were generally accompanied by inverse, nonsignificant relations for the other beverage types (5). Reviewers have concluded that the evidence does not support a major role for beverage choice (2, 3, 5).

The article by Tjønneland et al (9) in this issue deals with probably the single most important consideration in attempting to explain possible beverage type differences in CHD risk: the problem of trait differences between users of different beverage types. Do wine drinkers have a healthier lifestyle in other respects that could explain lower CHD risk? In a large California study wine preferers smoked less, had more education, and had more temperate drinking habits than those who preferred beer or liquor (10).

Tjønneland et al extend this concept by showing in a large Danish study population that wine drinking is strongly associated with intake of a healthy diet, which the authors defined as intake of fruit, vegetables, fish, salads, and olive oil. Of importance is the fact that these dietary habits seem independent of educational status, because education has been used as a marker for socioeconomic status and a presumed proxy for healthy lifestyle habits in several previous studies of beverage choice and CHD risk. Data were not available about wine type (red or white), but the only large population study with data about red compared with white wine showed no major differences in user traits or CHD risk (6). Tjønneland et al properly point out that causal inferences cannot be drawn because persons might simultaneously form dietary and beverage choice habits. The association of healthy habits is a general phenomenon that creates difficulties in interpreting epidemiologic findings. Less likely is the possibility raised by Tjønneland et al (9) that healthy habits of wine preferers are “an isolated Danish phenomenon.” One must agree with their laudably understated conclusion that their data “have impli-
cations” for interpretation of prior Danish findings of lower CHD and total mortality risk among wine preferrers.

In 1819, Samuel Black, a perceptive Irish physician with a great interest in angina pectoris, wrote what was probably the first commentary pertinent to the French paradox. With respect to the apparent disparity in occurrence of angina between Ireland and France, he attributed the low prevalence in the latter to “the French habits and modes of living, coinciding with the benignity of their climate and the peculiar character of their moral affections”(11). With slightly less circumstantial observational evidence, we are still struggling 180 y later to define the favorable “modes of living.”

Advice about health effects of alcohol should focus on individual risk-benefit balances of drinking, evaluated by history and risk of problem drinking, personal reasons for concern, CHD risk, and the long list of medical conditions caused by alcohol (12). Health professionals should realize that lay media reports have produced widespread general public acceptance of specific CHD benefits of red wine. However, the evidence shows no convincing published health-related data that should supplant personal preference as the guide to beverage choice in consumption of moderate amounts of alcohol.

REFERENCES