Re: Consumption of Black Tea and Cancer Risk:
A Prospective Cohort Study

Studies conducted in many laboratories in a variety of animal tumor model systems have shown that the consumption of tea, especially green tea, is associated with lower cancer risk [reviewed in (1)]. Many recent epidemiologic studies, although not conclusive, also suggest that humans who consume tea are at a lower risk of developing cancers of some body sites [reviewed in (1)]. A recent study published in the Journal (2) presented results and conclusions that are inconsistent with those from most other laboratory and epidemiologic studies [reviewed in (1)]. Although Goldbohm et al. (2) found that consumption of tea was inversely associated with stomach and lung cancers, they attributed this lower cancer risk to habits of tea drinkers who appeared to smoke less and to eat more vegetables and fruits. Thus, they concluded that the hypothesis that tea protects against four of the major cancers in humans is not true. This conclusion is valid only if tea consumption was expected to have effects beyond those expected by consumption of fruits and vegetables. This possibility is expecting too much and may be erroneous. Weissburger (3) stated that “individuals drinking four or more cups of tea (extracted from ~10 g tea) per day have the equivalent benefit of eating two fruits and vegetables.” In line with this belief, it appears that it is not valid to discount the effects of tea in cancer prevention. The study by Goldbohm et al. (2) clearly suggests that additional cohort studies of risk groups where the effects of vegetables and fruits can be accounted for, and not discounted, will be necessary before it can be concluded that tea consumption is or is not associated with reduced cancer risk in the human population.

HASAN MUKHTAR, PH.D.
Department of Dermatology
Case Western Reserve University
Cleveland, OH 44106-5028

References

Response
The comment by Dr. Mukhtar addresses two points. The first point concerns the evaluation of the epidemiologic evidence on the anticarcinogenic effect of tea; the second point concerns the analysis of and conclusions drawn from our investigation.

With respect to the latter point, Mukhtar interprets the results from our analysis incorrectly. We think this may be because of the lack of transparency of the multivariate analysis that we used for the adjustment of confounding. As a more straightforward example of the role of confounders in assessing the association between tea and cancer, we have conducted a stratified analysis of the lung cancer data, adjusting for the effect of smoking status. The results are shown in Fig. 1. Fig. 1. A shows the (age- and sex-adjusted) association between tea and lung cancer; the risk in the highest category of tea consumption is about half of that in the nontea drinkers. In Fig. 1, B, we conducted the same analysis, but divided the study population into three subgroups: current smokers, ex-smokers, and never smokers. We see that within each of these groups, the inverse association with tea consumption has almost disappeared. Thus, the seemingly protective effect of tea as shown in Fig. 1, A, is almost entirely because of the fact that there are more never smokers among tea drinkers, who thus have a lower risk of smoking-induced lung cancer. Stratified analysis cannot be used for adjustment for many variables simultaneously; therefore, we used multivariate analysis to also take into account the number of pack-years smoked and the consumption of vegetables and fruits, which were inversely and positively associated with tea drink-

Note
Correspondence to: S. M. Moghimi, Ph.D., Department of Pharmaceutical Sciences, University of Nottingham, NG7 2RD, U.K.
analysis, taking into account green and black tea consumption, cancer site, and the power and quality of the studies, would be welcome. We believe that the best research direction would be to search for the reasons why laboratory studies do not seem to agree with epidemiologic observations among humans.

References


Note

Correspondence to: R. Alexandra Goldbohm, Ph.D., TNO Nutrition and Food Research Institute, Utrechtseweg 48, P. O. Box 360, 3700 AJ Zeist, The Netherlands.

Erratum: “Reduction of Oncoprotein Transformation In Vitro by Albumin,” a Correspondence by Raju et al. (J Natl Cancer Inst 1996;88:556-7 (Issue 8)). The order of the authors was incorrect. The correct order is Rajala V. S. Raju, Raju S. S. Datla, Rajendra K. Sharma. The Journal regrets the error.