Letters to the Editor

Aspartame Consumption and Incidence of Hematopoietic and Brain Cancers

In Response: As Dr. Samuels points out, some individuals may consume large amounts of aspartame through food or pharmaceutical items containing small doses per serving (e.g., <10 mg per piece of chewing gum; ref. 1). Aspartame consumption for the majority of the public, however, comes largely from artificially sweetened beverages, which contain much higher amounts of aspartame per serving (180 mg per 12-oz can of diet soda, around 40-90 mg per cup of fruit drinks or iced tea, or 35 mg per table-top packet added to hot coffee or tea) than other food or pharmaceutical items (2). Diet soda alone accounts for over 70% of aspartame sales in the United States (3). Therefore, although we may have missed a small fraction of people in the NIH-AARP Diet and Health Study cohort who consume large amounts of aspartame through items other than artificially sweetened beverages, it is unlikely that consideration of consumption by these individuals would have altered the overall null association we found for aspartame and hematopoietic and brain cancers (2).

Dr. Samuels notes the importance of looking at high consumption rather than average. In the NIH-AARP cohort, 3,867 participants reported consuming 1,200 mg or more aspartame daily (equivalent to seven or more 12-oz cans of diet soda), which is the lowest dose that was followed by doubled hematopoietic cancers in female rats in a recent study (4, 5). The rates of hematopoietic (n = 12 cases) and brain cancers (n = 3 cases) among our study participants with high consumption, however, were not elevated. We found similarly null risk estimates, with tighter confidence intervals, for consumers of 600 mg or more aspartame (three or more 12-oz cans of diet soda) with no evidence of a dose response (2).

Dr. Samuels notes that the NIH-AARP Study cohort participants were AARP members who were 50 years of age or older at the beginning of the study, thus not representative of the entire U.S. population exposed to aspartame. It is theoretically possible that aspartame would cause cancer in younger people, but not in those older than 50 years, but few human carcinogens show that pattern. Within our cohort, effects were similar at ages 50 to 59, 60 to 69, and 70 to 76 years. Also, as Dr. Samuels points out, we excluded certain individuals from the analysis to reduce potential bias (2). Including them (n = 52,887), however, did not change the null associations.

The food frequency questionnaires used in our study, and in most other large epidemiologic studies, were targeted to ''usual'' dietary intake over the previous year. There is reasonable evidence, however, that diets remain consistent over long periods (6–8); that is, those who reported relatively high and low consumption of diet soda over the previous year were probably high and low consumers for much longer than the previous year. Therefore, the dietary assessment does not neglect dietary intake at younger ages: It is simply not directly measured in prior years. Nevertheless, as we explicitly acknowledge in our article and have discussed elsewhere (9), food frequency questionnaires do measure dietary intake with error, and we cannot rule out the possibility that a modest, but real, relation between aspartame and cancer has been attenuated in our data.

Additional data are always useful, of course, but we respectfully disagree with Dr. Samuels' assessment of the current literature. Numerous animal studies to date by independent investigators have not determined aspartame to be carcinogenic (10–12), and other human studies have not yielded any positive findings (13–15). Similarly, the European Food Safety Authority (16) and the U.S. Food and Drug Administration (17) concluded from their review of Soffritti et al.'s data (4, 5) that the increased number of hematopoietic and other cancers in the aspartame-treated group of rats was probably due to experimental conditions other than aspartame. Animal laboratory and epidemiologic studies each have their strengths and limitations. The observation of no association within the NIH-AARP epidemiologic study does not by itself eliminate as possible the hypothesis raised by Soffritti et al., but it contributes prospective cohort data to the evaluation of aspartame safety. In the end, it is the totality of evidence that matters.

Unhee Lim
Patricia Hartge
Lindsay M. Morton
Arthur Schatzkin
Nutritional Epidemiology Branch,
Division of Cancer Epidemiology and Genetics,
National Cancer Institute, NIH,
Department of Health and Human Services,
Rockville, Maryland

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