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# Dietary Components Related to N-Nitroso Compound Formation: A Prospective Study of Adult Glioma.

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## Abstract

BACKGROUND: N-nitroso compounds (NOC) are found in processed meat and are formed endogenously from intake of nitrite and nitrate. Endogenous NOC formation is antagonized by nitrosation inhibitors in fruit and vegetables (e.g., vitamin C) and promoted by heme in red meat. It has been hypothesized that a diet resulting in high exposure to NOCs increases adult glioma risk. METHODS: Using proportional hazards models, we tested this hypothesis among 545,770 participants in the prospective NIH-AARP Diet and Health Study, which assessed dietary intake at baseline (1995-1996) with a comprehensive food frequency questionnaire, and at ages 12 to 13 years with an abbreviated food frequency questionnaire. RESULTS: During follow-up through 2003, 585 participants were diagnosed with glioma. We found no significant trends in glioma risk for consumption of processed or red meat, nitrate, or vitamin C or E. We found significant positive trends for nitrite intake from plant sources (hazard ratio for quintile 5 versus quintile 1, 1.59; 95% confidence interval, 1.20-2.10; P for trend = 0.028) and, unexpectedly, for fruit and vegetable intake (hazard ratio, 1.42; 95% confidence interval, 1.08-1.86; P for trend = 0.0081). Examination of interactions between dietary intakes (e.g., nitrite and vitamin C) and a limited analysis of diet at ages 12 to 13 years provided no support for the NOC hypothesis. CONCLUSIONS: Our results suggest that consumption of processed or red meat, nitrite, or nitrate does not increase adult glioma risk, and that consumption of fruit and vegetables, vitamin C, or vitamin E does not reduce risk. Impact: Our results, in agreement with the only previous prospective analysis, cast doubt on the NOC hypothesis in relation to dietary intake and adult glioma risk. Cancer Epidemiol Biomarkers Prev; 19(7); 1709-22. (c)2010 AACR.

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