Dietary acrylamide and human cancer

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Low levels of acrylamide have been found in several foods cooked at high temperatures. While there is sufficient evidence for the carcinogenicity of acrylamide in experimental animals, the few epidemiologic studies conducted to date on occupational and dietary exposure to acrylamide have found no consistent evidence of association with human cancer risk. Using data from an integrated network of Italian and Swiss hospital-based case-control studies, we analyzed the relation between dietary acrylamide intake and cancers of the oral cavity and pharynx (749 cases, 1,772 controls), esophagus (395 cases, 1,066 controls), large bowel (1,394 cases of colorectal cancer, 4,765 controls), larynx (537 cases, 1,297 controls), breast (2,900 cases, 3,122 controls), ovary (1,031 cases, 2,411 controls) and prostate (1,294 cases, 1,451 controls). All the studies included incident, histologically confirmed cancer cases and controls admitted to the same network of hospitals for acrylamide exposure to acrylamide have found no consistent evidence of association with human cancer risk. Among occupational studies, a cohort study of 4,540 workers involved in the production of organic dyes. Occupational exposure to acrylamide, however, mostly involves male subjects. Thus, occupational studies provide no information on breast cancer and other female hormone-related neoplasms. Moreover, occupational exposures differ from dietary ones according to levels of acrylamide and routes of administration (i.e., inhalation or through dermal absorption); therefore, the results from the 2 settings may not be comparable.

Material and methods

Data were obtained from an integrated series of hospital-based case-control studies with the same design, questionnaire and inclusion criteria. Information was collected between 1991 and 2002 in several areas of northern Italy (greater Milan, the provinces of Pordenone, Padua, Udine and Gorizia, the urban area of Vaud between 1991 and 2002.

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