Symposium: Diet, Natural Products and Cancer Prevention: Progress and Promise

Diet, Natural Products and Cancer Chemoprevention

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ABSTRACT There is considerable scientific evidence to suggest that nutritive and nonnutritive plant-based dietary factors can inhibit the process of carcinogenesis effectively. Cancer chemoprevention involves pharmacologic intervention with synthetic or naturally occurring chemicals to prevent, inhibit or reverse carcinogenesis or prevent the development of invasive cancer. In light of the considerable effort that has been expended by scientists from the academic, governmental and private sectors in identifying, characterizing and utilizing potential cancer chemopreventive agents, it is reasonable to inquire about the progress that has been made to date and the promise that this field holds in the fight against cancer. The symposium entitled Diet, Natural Products and Cancer Chemoprevention: Progress and Promise was therefore organized at Experimental Biology 99 by the American Society for Nutritional Sciences to address in part these two issues. Progress in the development of cancer chemopreventive agents, examples of current clinical and experimental research of particular relevance to cancer prevention and the promise of chemoprevention in effectively contributing to the conquest of cancer were highlighted. J. Nutr. 130: 465S–466S, 2000.

KEY WORDS: • diet • chemoprevention • cancer

There has been considerable scientific evidence, both epidemiologic and experimental, accumulated in the past three decades indicating that modifications in lifestyle, including diet, can have a major effect on the risk for numerous cancers (Martinez and Giovanucci 1997, World Cancer Research Fund 1997). Of particular relevance is the consistent cancer-protective effect reported for individuals consuming increased quantities of fruits and vegetables compared with those with low intakes. This cancer inhibitory action by a variety of human nutrients derived from plants as well as of nonnutritive plant-derived constituents (phytochemicals) has been confirmed in different animal tumor models (Dragsted et al. 1993, Pezzuto 1996) and has led to an increased emphasis on cancer prevention strategies in which these dietary factors are utilized. There have been two major diet-related prevention strategies that have evolved to combat cancer, i.e., cancer chemoprevention and dietary cancer prevention, with appreciable overlap existing between them. Generally, cancer chemoprevention is recognized as the pharmacologic intervention with synthetic or naturally occurring chemicals to prevent, inhibit or reverse carcinogenesis or prevent the development of invasive cancer (Kelloff and Boone 1996, Kelloff et al. 1997, Mayne and Lippman 1997, Sporn 1991). On the other hand, dietary prevention is recognized as the changes in food consumption patterns necessary to decrease cancer development (Goodman 1997, Schatzkin and Kelloff 1995). The field of cancer chemoprevention became more prominent and focused beginning in the late 1960s; at that time, Dr. Lee Wattenberg, one of the founders of the field, conceptualized this strategy and suggested a mechanistic framework that provided order to the diverse array of agents identified (Wattenberg 1966, 1985 and 1992). The growth and importance of the chemoprevention approach was underscored by the establishment at the National Cancer Institute (NCI) of the Laboratory of Chemoprevention in the 1970s, a Chemoprevention Program in 1982 and, eventually, the Chemoprevention Branch of the Division of Cancer Prevention and Control. In 1998, THE MARCH-Coming Together to Conquer Cancer, a grass-roots movement committed to the conquest of cancer, issued a research task force report (The March 1998) compiled by scores of leading scientists, cancer survivors and advocates. On the topic of cancer prevention, they concluded that the “major areas of prevention research that promise to have a significant impact on cancer incidence, and in certain instances mortality, include behavioral modifications in tobacco use, nutrition and diet, and chemoprevention.”

In light of the considerable effort that has been expended by scientists from the academic, governmental and private sectors in identifying, characterizing and utilizing potential cancer chemopreventive agents, it is reasonable to inquire about the progress that has been made to date and the promise that this field holds in the fight against cancer. The American Society for Nutritional...
quences of cancer. The collective insights of numerous chemopreventive compounds and under-
scoring the need to increase efforts to translate our present knowledge into effective tools to reduce the prevalence and conse-
quences of cancer.

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