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Dietary Cancer Chemoprevention: An Overview

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ABSTRACT Cancer is a major cause of mortality and morbidity worldwide. The majority of cancers are reported to be caused by environmental carcinogenic agents, occupational environment and dietary habits. Dietary habits are one of the major contributory factors for the genesis of cancer. The optimal way of dealing with any disease is by prevention, this is particularly relevant for cancer. Despite decade of basis and clinical research and trial of promising new therapy, overall cancer survival has only improved marginally. Molecular targeted agents are currently being studied in all treatment settings including chemoprevention, which is defined as the use of natural or synthetic agents to interrupt the process of carcinogenesis and to prevent or delay tumor growth. Epidemiological and experimental studies have indicated that dietary fat has an influence on carcinogenesis process. However, it has been observed that individuals who consume relatively large amounts of vegetables and fruits are at decrease risk of cancer of many organs. Several epidemiological studies suggest that consumption of cruciferous vegetables may be particularly effective in reducing cancer risk. Glucosinolates in crucifers are converted to isothiocyanates by plant myrosinase and gastrointestinal microflora, these are potent inducer of phase II proteins and is effective to block chemical carcinogenesis in animal models. Some dietary constituents are reported to act as naturally occurring cancer prevention agents and may explain some of the differences in cancer incidence seen in populations with varying dietary intake. Long term supplementation of the diet with folate, seems to lower the risk of colorectal cancer. Curcumin in the spice turmeric, genistein in soya, and catechins in tea have tumor-suppressing properties in rodent models of carcinogenesis. Although the results of clinical interventions trials of b-carotene to prevent lung cancer, and of dietary augmentation with fiber or fruits and vegetables to reduce the occurrence of colonic polyps have so far been negative, a structured path for the development of diet-derived constituents as cancer chemoprevention is emerging. By applying chemoprevention approaches from the use of single nutrients to multiple dietary constituents and functional foods, the scope of future cancer prevention strategies will be broadened. A new paradigm for diet, nutrient and cancer prevention can be developed using a multidisciplinary approach that includes lifestyle and environmental

changes, dietary modification and physical activities consciousness to reduce the burden of cancer.

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