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Preface
The role of vitamins and other nutrients in prevention and treatment is becoming increasingly evident. I personally consider this as the ‘new frontier’ of cancer research. Several experimental and human epidemiological studies have already suggested that the high levels of vitamins may be of protective value against cancer. In addition, diet enriched in fibre, fruits, and vegetables appear to be associated with a low risk of cancer, whereas
diets containing excess of fat and meat are associated with a high risk of cancer. However, at this time, we have no data in humans to evaluate the extent of the involvement of these nutrients in the reduction or the enhancement of cancer incidence. It must be shown by an intervention trial that the supplemental vitamins and other nutritional elements, indeed, reduce the incidence of cancer in humans. It is only then that we can be sure of the protective value of these nutrients against human cancer. Vitamins could reduce the incidence of cancer by more than one mechanism: (1) they can directly kill the newly transformed cells; (2) they can reverse the newly transformed cells back to normal cells; (3) they can indirectly kill the newly transformed cells by stimulating the host’s immune system, and (4) they can prevent the action of tumor-promoting as well as tumor-initiating agents.

Some intervention trials are in progress and some are planned using mostly one vitamin at a time. It is very important that we initiate an intervention trial in humans systematically and carefully using only one agent at a time. From intervention studies we would like to answer the following questions: (a) How much vitamin is needed for protection? (b) Do we need one or more vitamins for a maximal protection? (c) Is one type of vitamin more effective than another against certain tumors? (d) Are vitamins by themselves sufficient or do they need the presence of other dietary factors for a maximal protection, and what are the long-term effects of these vitamins and nutrients? It is very encouraging to note that the National Cancer Institute (Division of Chemoprevention Program) is initiating several intervention trials among the high risk population using the individual nutrients. I believe that, during the next 10 years, we will be able to answer some of the above questions in a definitive manner.

This volume deals with basic mechanisms of carcinogenesis as well as those factors which modify the biochemical steps involved in the processes of cancer formation. The two-step theory of carcinogenesis involving initiation and promotion has helped a great deal in identifying carcinogenic and anticarcinogenic substances. However, the crucial biochemical events associated with the promotion stage of carcinogenesis remains to be elucidated. The knowledge of these events is important for developing a biochemical strategy for the prevention of tumor.

In addition to having a preventive role, vitamins (primarily A, C and E) and certain nutrients may markedly improve the current management of tumor by several mechanisms. Vitamins alone may induce differentiation associated with or without growth inhibition. The extent and the type of effect depend upon the form of vitamin and the type of tumor. Vitamins
may enhance the growth inhibitory effect of tumor therapeutic agents (chemical, radiation, and hyperthermia). The extent of enhancement depends upon the form of vitamin, the type of tumor and the form of tumor therapeutic agent. Vitamins may reduce some of the side toxic effects of certain chemotherapeutic agents, and they may also increase the humoral and cellular immunity. This monograph describes these functions of vitamins in the treatment of tumor. In addition, it contains recent clinical data on the role of retinoids and vitamin E in the treatment of human tumor. This book will be valuable to cell biologists, epidemiologists, nutritionists, oncologists (basic and clinical), and pharmacologists.

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