

## Natural Products and Chemoprevention of Cancer

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Human health depends on the a priori and a posteriori factors: 1) inherited genetic traits of individuals, and 2) the sum of environmental exposure from the time of conception and until death. It is now well known that the age-related disease due to a major a posterior factor is attributed to individual dietary habits of life time. A variety of age-related disease (e.g. cardiovascular, atherosclerosis, diabetes, senile dementia, Alzheimer's disease, Creutzfeld-Jakob disease, and cancer, etc.) is in the increase as the aged-population is increased. Increased mortality from these age related disease is not simply caused by increased longevity, but attributed to dietary imbalance. According to the U.S. Surgeon General Koop's report stated that 50% of cerebrovascular disease, 54% of cardiovascular disease, 49% of atherosclerosis, and 37% of cancer are preventable through dietary and life-style modification. According to recent World Health Organization' data, annual cancer death in the world will be close to 6 million per year, and is now the leading cause of death. The U.S. National Cancer Institute spent 25 billion dollars for the past 25 years to develop new anticancer drugs to cure cancers in the U.S., but there were more than new cancer cases per year since 1990.

A principle concept of alternative medicine is to prevent the cause or slow down the disease process rather than trying to cure when patients are diagnosed with cancer. The 80% of cancer cause is attributed to dietary habits. Our diets contain a variety of carcinogens as well as anticarcinogens. Therefore, through research, it is possible to minimize the cause of cancers by selective dietary habits along with chemopreventable supplements from Natural products (e.g. antimetabolites, antimutagens, antihormones, antiinflammatory agents, antioxidants, antipromoters, antimitotic agents, prodifferentiators, and immunomodulators, etc.). Cancer chemoprevention can be achieved during any points between the genetic instability and intraepithelial neoplasia. Since the latency for cancer development is very long in humans (10-40 years), the concept of surrogate intermediate biomarkers, such as molecular and pleomorphic nuclear biomarker were developed to evaluate chemopreventive effects at the target organs. The current state of cancer chemopreventive concepts, approach, preclinical and clinical data will be presented and discussed.