

## ANTIOXIDANTS ROLE IN THE CANCER PREVENTION

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### INTRODUCTION

Free radicals are extremely reactive molecules that can cause cell damage. When an atom or a molecule (a compound with two or more atoms) receives or loses an electron, they form (a small negatively charged particle found in atoms). Free radicals are produced naturally in the body and are involved in a variety of typical cellular functions. Free radicals, on the other hand, can be harmful to the body in excessive concentrations, causing damage to all major components of cells, including DNA, proteins, and cell membranes. Free radical damage to cells, particularly DNA damage, may play a role in the development of cancer and other health problems. Exposure to ionising radiation and other environmental pollutants can result in abnormally high levels of free radicals in the body. An electron may be lost when ionising radiation strikes an atom or molecule in a cell, resulting in the production of a free radical. The process by which ionising radiation destroys cells is by the generation of unusually large quantities of free radicals. Furthermore, some environmental hazards, such as cigarette smoke, some metals, and high-oxygen environments, may contain huge numbers of free radicals or drive the body's cells to make more. The most prevalent type of free radical produced in live tissue is oxygen-containing free radicals. "Reactive oxygen species," or "ROS," is another name for them.

Antioxidants are substances that interact with free radicals and neutralise them, keeping them from doing harm. "Free radical scavengers" is another name for antioxidants. Antioxidants are produced by the body and are used to neutralise free radicals. Endogenous antioxidants are the antioxidants that occur naturally in the body. The body, on the other hand, obtains the balance of the antioxidants it requires from external (exogenous) sources, chiefly the diet. Dietary antioxidants are the term for these exogenous antioxidants. Antioxidants can be found

in abundance in fruits, vegetables, and grains. Supplements containing dietary antioxidants are also available. Beta-carotene, lycopene, and vitamins A, C, and E are examples of dietary antioxidants (alpha-tocopherol). Increased levels of exogenous antioxidants have been proven in laboratory and animal experiments to inhibit the forms of free radical damage that have been linked to cancer formation. As a result, scientists have looked at whether consuming dietary antioxidant supplements can help humans reduce their chance of getting or dying from cancer.

Many observational studies have been undertaken to see if taking dietary antioxidant supplements reduces the incidence of cancer in humans. These investigations include case-control studies and cohort studies. Overall, the findings of these investigations have been mixed (5). Because observational studies cannot effectively account for biases that may impact research outcomes, the findings of any single observational study should be interpreted with caution. Antioxidants have been shown in preclinical experiments to accelerate tumour growth and metastasis in tumor-bearing animals, as well as to boost the ability of circulating tumour cells to spread. Antioxidant supplements should be taken with caution until more is learned about their impact in cancer patients. Patients with cancer should tell their doctors if they are taking any supplements. As a result, ongoing cancer prevention research is focused on gaining a better understanding of the antioxidant content of individual foods, how the various antioxidants and other substances in foods interact with one another, and factors that influence the uptake and distribution of food-derived antioxidants in the body.

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### CONFLICT OF INTEREST

The author declares that there are no conflicts of interest.