

## THE ROLE OF SYNTHETIC ANTI-OXIDANTS: A SHORT REVIEW

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### INTRODUCTION

The reactive oxygen species (ROS) under physiological settings, produced by mitochondria, phagocytic cells, peroxisomes, and cytochrome P450 enzymes in the presence of O<sub>2</sub> may have a dual function in the human organism. On the one hand, they play a role in cell signaling pathways that lead to the activation of transcription factors that control the expression of genes involved in cell development and differentiation. They, on the other hand, produce oxidative damage to cellular DNA, protein, and lipids, which can lead to the onset or progression of a variety of diseases, including cancer, cardiovascular disease, type 2 diabetes, cataract, rheumatoid arthritis, and other neurological disorders. Synthetic antioxidants are chemically manufactured substances that are added to food as preservatives to assist prevent lipid oxidation because they do not occur naturally. Synthetic antioxidants have been employed to stabilise fats and oils due to the inherent instability of natural antioxidants. Butylated hydroxytoluene (BHT) and butylated hydroxyanisole (BHA) were created to preserve petroleum against oxidative gumming in the first place. These chemicals, on the other hand, have been employed as antioxidants in human meals since 1954 and are perhaps the most prevalent antioxidants used today. BHT and BHA are typically used together in fats and oils because they have similar names, structures, and antioxidant activity.

Many antioxidant substances have been shown in epidemiological studies to have anti-inflammatory, anti-atherosclerotic, antitumor, antimutagenic, anticarcinogenic, antibacterial, and antiviral properties to varying degrees. Increased oxidative stress is frequently linked to the development and progression of diabetes and its consequences, which is usually followed by an increase in free radical generation or a failure of antioxidant defence. Though natural antioxidants have been shown to lessen the incidence

of cancer, cardiovascular disease, diabetes, and other aging-related disorders, there is still a lot of debate in this field. Antioxidants regulate gene activity and help to avoid illnesses. The antioxidant network is the body's own intelligence system. It constantly examines the health of each of your body's billions of cells. When a problem is detected, antioxidants activate the appropriate gene, which then activates the cells that are required to solve the problem. When invading viruses are discovered, antioxidants, for example, direct genes to notify the immune system. To destroy the viruses, the immune system produces additional white blood cells. The antioxidant network, however, is where the process starts. Because antioxidants may help regulate hazardous genes, they can be used to cure diseases at their source by suppressing bad genes before they can cause harm, making antioxidants the ultimate preventive medicine.

The natural antioxidants have been proven to be particularly effective in the prevention of some diseases due to their ability to reduce the formation of free radicals. Although it is clear that natural antioxidants offer numerous health benefits, it is equally important to remember that if consumed in excess, they might have negative consequences. Antioxidants work as oxidation inhibitors in foods that are susceptible to oxidation through a variety of ways. However, some foods lack natural antioxidants and can rapidly decay during processing or storage, necessitating the use of synthetic antioxidants. Most synthetic antioxidants, on the other hand, are only efficient at low doses, and adding more could result in a pro-oxidant impact.

### ACKNOWLEDGMENT

None

### CONFLICT OF INTEREST

The author declares that there are no conflicts of interest.