

Antioxidants and its uses

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Antioxidants are substances used to preserve food by retarding deterioration, rancidity or discoloration caused due to oxidation. Antioxidants neutralize the free radicals in the body and prevent oxidation reaction. Damage that leads to chronic diseases is cumulative, usually occurring over decades. That's why it is important that antioxidants requirements be met on a daily basis to slow this cumulative damage that builds up over the course of lifetime. Insufficient antioxidants in the body leads to excessive free radicals causing oxidative stress and lead to development of serious diseases and memory loss. The human body makes its own antioxidant to neutralize free radicals but in our present environment free radicals far exceed the antioxidant produced in the bodies so there is a need to use the natural and synthetic antioxidants in our diet but in low and effective concentrations. And in addition they also can be used as natural preservatives, colouring agents and therapeutic compounds which help to increase shelf life and maintain the organoleptic properties, vitamin content and the eye – appeal of foods.

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INTRODUCTION

An antioxidant is a molecule capable of slowing or preventing the oxidation of other molecules. Oxidation is a chemical reaction that transfers electrons from a substance to an oxidizing agent. Oxidation reaction can produce free radicals, which start chain reactions that damage cells. Antioxidants terminate this chain reaction by removing free radicals intermediates and inhibit other oxidation reactions by being oxidized themselves. The term antioxidant originally was used to refer specifically to a chemical that prevented the consumption of oxygen. Early research on the role of antioxidants in biology focused on their use in preventing the oxidation of unsaturated fats, which is the cause of rancidity. Antioxidants are classified into two broad divisions, depending on whether they are soluble in water (hydrophilic) or in lipids

(hydrophobic).

Antioxidants function by interfering with the chain reaction. If the number of free radicals can be kept low enough, oxidation will not occur, all have strange relationship with oxygen. Oxygen is needed to breathe, while oxygen is essential for all metabolic processes in the body. This stress is responsible for many de-generative conditions in our body e.g. ageing. An antioxidant should not have any harmful physiological effect and should not impart an objectionable flavour, odour or colour to the food in which it is present. It should be effective in low concentrations (0.01-0.02%) and be fat soluble. Gum Gualic was the first anti-oxidant approved for stabilization of animal fats, specially lard. Antioxidants have been center of much media attention in recent years due to the ability to stabilize reactive potentially harmful free radicals in the body. Free radicals are the cause of many diseases from cancer to colds. Free radicals damage a person's DNA and this damage can be prevented and sometimes reversed with healing properties of antioxidants.

What are oxidants?

Oxidant chemicals also called free radicals are produced during normal aerobic cell respiration. They also occur when

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