



Influence of Food Processing Techniques on Nutrient Bioavailability and Antioxidant

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DESCRIPTION

Micronutrients Food processing is the transformation of raw ingredients into food products through the use of various techniques. It helps to preserve food, make it safe for consumption, reduce its cost, and increase its convenience. It can also be used to enhance certain nutritional properties of a food, such as antioxidants and bioavailability. Antioxidants are compounds found in some foods that help to protect our bodies from damage caused by oxidation. They have been linked to a number of health benefits such as prevention of heart disease, cancer, and diabetes. Some foods are more bioavailable than others due to their structure or processing methods they have undergone before consumption. When it comes to food processing, there are several ways that can affect the amount of antioxidants and bioavailability in our diets. This article will discuss how certain food processing techniques may impact these nutrients in an effort to better understand the effects of food production on health.

Foods affect antioxidant content and bioavailability

Food processing is a major factor in understanding the impact of antioxidants and bioavailability. Many processed foods often contain high amounts of sugar, fats, and salt, which can reduce the naturally occurring antioxidants in food. Although processed foods are convenient to store and consume, they lack vital nutrients that contribute to the antioxidant content and bioavailability of a food.

Reduction of antioxidant content: When food is processed for convenience, it typically undergoes heating, cooling, drying, or freezing all of which can have an effect on the antioxidant content. For instance, when vegetables are blanched (a process involving boiling water), their antioxidant content can be reduced by up to 50%. Similarly, when grains are milled (ground into flour), their antioxidant levels can go down by up to 70%. Furthermore, the addition of additives such as sugar to processed foods can also lead to a decrease in antioxidant content.

Impact on bioavailability: The impact of processing on bioavailability is just as important as its effect on antioxidants. High heat processing has been shown to diminish the bioavailability of certain vitamins and minerals present in food. Additionally, some processed foods contain components that inhibit our bodies' ability to absorb these vital nutrients. For example, added Trans fats have been linked with lower absorption rates for omega-3 fatty acids an essential part of a healthy diet.

Maximize nutrient retention through proper food processing techniques

Food processing is a major factor in the breakdown of nutrients and affects the quality, safety, and bioavailability of food. Understanding the impact of food processing on antioxidants and bioavailability can help maximize the preservation of these nutrients for better health. The most common types of food processing are thermal, chemical, and mechanical. Thermal processing involves heating or cooling foods to preserve them. Examples are pasteurization, homogenization, blanching, steaming, roasting, baking and grilling. Chemical processing uses food additives such as preservatives and flavouring to extend shelf life or enhance taste. Mechanical processing includes grinding, comminution (chopping or mincing), extrusion (shaping by forcing through a die) and homogenization (mixing fat with liquid).

Effect on antioxidants: High temperatures used in thermal processing can cause damage to sensitive antioxidants such as vitamins A and C. Vitamins A and C are important because they play a role of free radical damage which can lead to diseases like cancer. Additionally high temperatures can also cause oxidation of polyunsaturated fats which can lead to an increased risk of cardiovascular diseases. On the other hand low temperatures used in freezing increase enzyme activity leading to an increase in antioxidant levels such as vitamin C. Chemical treatment with preservatives can also affect antioxidant levels depending on which one is used.

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Effect on bioavailability: The type of food processing has an effect on the bioavailability of nutrients such as minerals iron zinc calcium etc. For example thermal treatment increases the availability of minerals while some chemical treatments like soaking may reduce the availability due to filtering out during soaking process. Mechanical process like grinding increases mineral availability due to increased surface area for absorption by the body while homogenization reduces mineral availability due to fat globule size reduction leading to reduced absorption rate.

Food processing plays a major role in determining the availability of antioxidants and bioavailability in foods. It has been found that food processing has an impact on the flavor, color, texture and nutrients present in food. In some cases, it can help reduce or eliminate contaminants that may be present in some foods. However, it is important to note that food processing can also reduce or eliminate beneficial components like vitamins and minerals, as well as antioxidants.