

A REVIEW ON ANTIOXIDANT FROM NATURAL SOURCE

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ABSTRACT

Antioxidants are compounds that inhibit oxidation. Oxidation may be a reaction which will produce free radicals, thereby resulting in chain reactions which will damage the cells of organisms. Antioxidants like thiols or vitamin C terminate these chain reaction. To balance the oxidative stress, plants and animals maintain complex systems of overlapping antioxidants like glutathione and enzymes (e.g. catalase, and superoxide dismutase) produced internally or the dietary antioxidants vitamin C and vitamin E. Antioxidant vitamins are found in vegetables, fruits, eggs, legumes and nuts. Vitamin A, C and E are often destroyed by long term storage or prolonged cooking. The consequences of cooking and processing are complex as these processes also can increase the bioavailability of antioxidants, like some carotenoids in vegetables. Processed food contains fewer antioxidant vitamin than fresh and uncooked foods, as preparation exposes food to heat and oxygen.

Keywords: Antioxidants, Enzymatic antioxidants, Natural antioxidants, Oxidants, Probiotics.

INTRODUCTION

Antioxidants are molecules that help protect the body from harmful molecules called free radicals. Free radicals can damage cells and contribute to aging and various diseases. Antioxidants neutralize free radicals by donating electrons, thereby preventing them from causing damage. They are found in a variety of foods, especially fruits, vegetables, nuts, and whole grains, and are also available as dietary supplements. Common antioxidants include vitamins C and E, beta-carotene, selenium, and flavonoids ¹.

Consuming a diet rich in antioxidants is believed to promote overall health and may reduce the risk of chronic diseases such as heart disease, cancer, and neurodegenerative disorders. There are many different types of antioxidants, including vitamins (such as vitamin C, vitamin E, and vitamin A),

minerals (such as selenium and zinc), and phytochemicals (found in plants). Common dietary sources of antioxidants include fruits, vegetables, nuts, and whole grains ².

SOURCES

Antioxidants are found abundantly in various foods, especially plant-based foods. There are a few typical food sources of antioxidants ³⁻⁵:

Fruits: Many fruits are rich in antioxidants, including berries (such as strawberries, blueberries, raspberries, and blackberries), citrus fruits (such as oranges, lemons, and grapefruits), grapes, kiwi, and cherries.

Vegetables: Vegetables are another excellent source of antioxidants. Some examples include spinach, kale, broccoli, carrots, sweet potatoes, tomatoes, bell peppers, and Brussels sprouts.

Nuts and seeds: Nuts and seeds contain antioxidants, as well as healthy fats and other nutrients. Examples include almonds, walnuts, pecans, sunflower seeds, and chia seeds.

Whole grains: Barley contain antioxidants, along with fiber and other important nutrients.

Herbs and spices: Many herbs and spices are rich in antioxidants. Examples include cinnamon, turmeric, ginger, oregano, basil, and parsley.

Beverages: Certain beverages also contain antioxidants, such as green tea, black tea, and coffee (in moderation).

Dark chocolate: Dark chocolate is rich in antioxidants, particularly flavonoids are good for heart health.

Incorporating a variety of these antioxidant-rich adding certain foods to diet can ensure you get a wide range of antioxidants to support your overall health and well-being.

1. Acai berries

Historically, acai berries have been a staple in the diets of native people in regions like Brazil, Panama, and Trinidad for hundreds of years. The name "acai" is believed to be derived from the Tupi or Tupian word "iwaca'i," meaning "the fruit that cries" or "expels water." These berries are considered a super food due to their high nutritional value and are popular among athletes and health-conscious individuals ⁶.

Acai berries are often consumed in frozen or powdered form, as they have a short shelf life and are mainly harvested in South America ⁷⁻⁹.

The nutritional breakdown of 100 grams of frozen acai berry pulp is as follows:

- Calories: 7012
- Fat: 5 grams
- Saturated fat: 1.5 grams
- Carbohydrates: 4 grams
- Protein: 2 grams
- Fiber: 3 grams
- Potassium: 105 mg
- Iron: 0.6 mg
- Calcium: 35 mg

2. Passion fruit

Passion fruit, with its vibrant and exotic appearance, is not only a treat for the taste buds but also a powerhouse of antioxidants. This tropical fruit, known scientifically as *Passiflora edulis*, comes in various colors, including purple, yellow, and red, each with its own unique flavor profile. Beyond its delicious taste, passion fruit is loaded with beneficial antioxidants that contribute to its health-promoting properties¹⁰⁻¹³.

Antioxidants are substances that aid in shielding the body from the damaging effects of free radicals and oxidative stress. Among the many antioxidants found in passion fruits are vitamin C, beta-carotene, and polyphenols, which play crucial roles in maintaining overall health and well-being.

3. Wolf Berry

Wolfberry, also known as goji berry or *Lycium barbarum*, is a bright orange-red fruit that numerous health benefits, particularly its antioxidant properties. These small, nutrient-dense berries are packed with a variety of antioxidants and other essential nutrients, making them a popular superfood choice for promoting overall well-being.

Antioxidants are molecules that help protect the body from oxidative stress by neutralizing harmful free radicals. Wolfberries beta-carotene, zeaxanthin, and various polyphenols, which contribute to their impressive health-promoting effects¹⁴.

4. KIWI

In the realm of nutrition, few fruits boast the vibrant hue and nutritional prowess of the kiwi. Beyond its tantalizing taste and exotic appeal, the kiwi holds a secret weapon against cellular damage: antioxidants.

Before delving into the kiwi's antioxidant arsenal, let's grasp the concept of antioxidants. Think of them as the body's natural defense system against harmful molecules called free radicals.

These pesky molecules can wreak havoc within our cells, leading to oxidative stress and potentially contributing to various health issues, including aging, inflammation, and even chronic diseases like cancer.

Enter the kiwi, adorned with a rich array of antioxidants that come to the body's rescue. Vitamin C takes center stage in this green gem, with kiwis packing even more of this essential nutrient than oranges. Vitamin C not only neutralizes free radicals but also regenerates other antioxidants like vitamin E, amplifying the body's defense mechanisms^{15,16}.

Beyond Vitamin C: Polyphenols

But the kiwi's antioxidant prowess extends beyond vitamin C. Polyphenols, another group of antioxidants found abundantly in kiwis, lend their protective might. These compounds exhibit anti-inflammatory properties, aiding in reducing the risk of chronic diseases and supporting overall well-being.

The Benefits Unveiled

The synergistic blend of antioxidants in kiwis offers a host of health benefits. From bolstering the immune system to promoting skin health and aiding in digestion, the kiwi stands as a potent ally in our quest for optimal health. Studies even suggest that regular consumption of kiwi may lower the risk of heart disease and improve respiratory function, showcasing the far-reaching impact of its antioxidant-rich profile.

Incorporating Kiwis into Your Diet

Fortunately, harnessing the power of kiwi antioxidants is as simple as indulging in this delicious fruit. Whether enjoyed on its own, sliced atop yogurt or salads, or blended into refreshing smoothies incorporating kiwi into your daily diet can elevate both your palate and your health.

5. Cranberries

In the colorful realm of berries, cranberries not just for their vibrant hue and tart flavor, but also remarkable health benefits, particularly their antioxidant prowess. These tiny, ruby-red gems pack a powerful punch against oxidative stress, thanks to their impressive array of antioxidants.

Understanding Antioxidants

Before delving into the cranberry's antioxidant arsenal, let's grasp the concept of antioxidants. Think of them as nature's defenders against harmful molecules known as free radicals. These rogue molecules, generated through normal bodily processes and external factors like pollution and UV radiation, can wreak havoc on cells, leading to oxidative damage and contributing to various health issues, including aging and chronic diseases^{17,18}.

The Cranberry's Antioxidant Arsenal

Enter the cranberry, armed with a diverse range of antioxidants that come to the body's rescue. Chief among them are flavonoids, particularly anthocyanins, which give cranberries their distinctive red color. These potent antioxidants help neutralize free radicals, reducing the risk of cellular damage and inflammation.

Beyond Anthocyanins: Other Antioxidants

But the antioxidant benefits of cranberries extend beyond anthocyanins. These tart berries also contain other beneficial compounds such as proanthocyanidins and vitamin C, further enhancing their antioxidant capacity. Proanthocyanidins, in particular, are believed to play a significant role in supporting urinary tract health by preventing the adhesion of bacteria to the bladder wall.

The Health Benefits Unveiled

The antioxidant-rich profile of cranberries offers a host of health benefits. From supporting cardiovascular health and boosting immune function to promoting urinary tract health and reducing the risk of certain cancers, cranberries are a nutritional powerhouse with far-reaching effects.

Incorporating Cranberries into Your Diet

Fortunately, harnessing the power of cranberry antioxidants is as simple as incorporating these tart berries into your daily diet.

Whether enjoyed fresh, dried, or in the form of juice, cranberries can add a burst of flavor and a dose of health-promoting antioxidants to a variety of dishes, from salads and sauces to baked goods and smoothies ¹⁹.

6. NASHI

"Step into the world of Nashi fruit, a treasure trove of antioxidants waiting to be discovered! Nashi, also known as Asian pears, not only delight the palate with their crisp texture and juicy sweetness but also boast an impressive array of antioxidants. These antioxidants, including vitamin C, flavonoids, and various polyphenols, stand as nature's guardians, shielding our cells from the harmful effects of oxidative stress. With Nashi fruit, every bite is a journey towards better health, as these antioxidants work tirelessly to support our immune system, promote skin health, and combat inflammation. So, indulge in the refreshing taste of Nashi fruit, knowing that with each bite, you're nourishing your body with a burst of antioxidant goodness, making it a delicious and nutritious addition to your daily diet ²⁰.

CONCLUSION:

In conclusion, the antioxidant activities and health benefits sources underscore the importance of diets and lifestyles. Through neutralize harmful free radicals, antioxidants preventing oxidative stress and cellular damage, thereby reducing the risk of various chronic diseases such as cardiovascular ailments, cancer, and neurodegenerative disorders. Natural sources of antioxidants, including fruits, vegetables, nuts, seeds, and herbs, offer a diverse array of compounds such as vitamins (like vitamin C and E), minerals (such as selenium and zinc), flavonoids, polyphenols, and carotenoids, each with its unique mechanism of action and healthpromoting properties. By consuming a balanced diet rich in these natural sources, individuals can harness the synergistic effects of these compounds to support overall health and well-being. Moreover, research suggests that the bioavailability and effectiveness of surpass those of synthetic supplements, highlighting important whole foods in providing comprehensive nutritional benefits. However, it's essential to note that while antioxidants offer numerous health advantages, they are not a panacea, and a holistic approach to health, including regular exercise, adequate sleep, and stress management, is paramount. In summary, embracing a diet abundant in natural antioxidant-rich foods represents a proactive and sustainable strategy for enhancing health and longevity.

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