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Role of superfoods in prevention of disease

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Abstract
The term "functional food" refers to any food, processed or not, that, according to scientific research, can help the body accomplish particular operational goals and is crucial for preventing degenerative diseases and promoting health. Because functional foods contain bioactive substances, which have particular biological features and actions within the human body, they may have positive health impacts. Calcium-enriched milk, omega-3 fatty acid-enriched juices, probiotic-rich yoghurt, and phytosterol-enriched margarines are a few examples of processed functional foods. The potential health benefits of other conventional foods, like tea, blueberries, berries, and many more referred to as "superfoods," are also continuously being confirmed by new scientific research. The emergence of numerous chronic degenerative diseases, including cancer, diabetes, obesity, osteoporosis, and cardiovascular disease, has recently prompted strategies to protect human health by implementing suitable eating patterns. Therefore, functional foods are recommended as a possible way to support the prevention strategy without resorting to therapy, as long as they fall within the parameters of hygiene and balanced nutrition, with the goal of improving population health.

Keywords: Berries, disease prevention, superfoods, tea

Introduction
According to previously released studies, traditional functional foods, one type of functional food, contain bioactive substances that have certain physiological effects. The significance of non-class processed foods that are nutritious has been demonstrated with numerous scientific investigations in recent years. Composition is perfect for supporting and enhancing the human body's healthy operation. We refer to these foods as superfoods. Superfoods are conceptually defined as foods that have a high nutritional value because of their high nutrient content and a high biological value because of their varied bioactive components, and they provide the body with acceptable bioavailability and bioactivity. (Devalaraja S *et al*., 2011) [1].

According to Wolfe (2009) states that superfoods are a specific group of foods, either natural or moderately processed, that include a large number of nutrients and possess a dozen or more special qualities. By boosting the immune system, these foods have been shown in tests to boost the body's vitality and can be an excellent option for enhancing general health. The most significant bioactive elements of superfoods that have been shown to benefit the human body are vitamins, minerals, probiotic microorganisms, antioxidants, polyunsaturated fatty acids (Omega-3, Omega-6), essential amino acids, polysaccharides, and various enzymes. Vitamins A, C, and E, flavonoids, selenium, β-carotene, zinc, lycopene, albumin, uric acid, bilirubin, coenzyme Q10, and polyphenols like anthocyanidins are among the most significant antioxidants of the superfoods because their antioxidant activity is paramount. More and more people are turning to foods high in nutrients to enhance their quality of life and promote their health as a result of the epidemic emergence of numerous degenerative diseases, which has intensified the desire to find remedies in the natural environment. Numerous recent scientific studies that have emphasized the significance of different superfoods, including hippophages', goji berries, blueberries, spirulina, kefir, royal jelly, and others, have supported this trend. (Bensmira M *et al*., 2012) [2].

Specifically, the following are the most important superfood based on research obtained from various studies: (Lorent M *et al*., 2013) [3].

- Fruits: strawberries, raspberries, blueberries, pomegranates, and berries.
- Dried nuts, including cereal grains, almonds, and walnuts.

- Pulses: mastic, sweet potatoes, cocoa, and red beans.
- Vegetables: spinach and broccoli.
- Seaweed: chlorella and spirulina.
- Milk products: donkey milk and kefir.
- Tea, ginkgo biloba, and ginger are herbs.

The most important superfoods identified by scientific literature are included below, along with information on their nutritional content and possible health benefits. These include hippophages', maize, blueberries, tea, kefir, maca plants, acai berries, goji berries, and more.

Tea (*Camellia sinensis*)

Tea is made from the leaves of the *Camellia sinensis* plant, which is a member of the Theacheae family. It is the second most common beverage in the world after water, and because so many people drink it, research into it is quite interesting. Tea is divided into three primary categories based on the industrial processing currently in use:

- Fermented green tea, which is made by drying and steam-processing the plant's young leaves. This prevents the polyphenols from oxidizing by deactivating the phenol oxidase enzymes.
- Oolong tea, which is made when plants' leaves go through a mild fermentation process before drying.
- Fermented black tea, which goes through a lengthy fermentation process before being dried and vaporized. This enables polyphenols to be oxidized to a variety of oxidized derivatives by phenol oxidases. (Sanlier N *et al*., 2018) [5].

About 36% of fresh tea leaves are polyphenols, 25% are carbs, 15% are proteins, 6.5% are lignin, 5% are ash, 4% are amino acids, 2% are lipids, 1.5% are organic acids, 0.5% are chlorophyll, and carotenoids, along with a variety of other compounds in less than 0.1%. The polyphenols, which make up 18-36% of the tea's dry weight, are either free aglycones or glycosides. Flavonoids as well as phenolic acids are the primary polyphenols present in tea. Free radical scavenging activity, complexation of ions that contribute to the generation of free radicals, pro-oxidant regulatory mechanisms, and antioxidant enzyme systems are the primary mechanisms of tea polyphenols' antioxidant action within the body. (Zhang R *et al*., 2016) [6].

Health benefits of tea (*Camellia sinensis*)

Health benefits	Compounds responsible for benefits
Reduce relative risk of cancer	Polyphenols, green tea catechins, and black tea thioflavins
Cardioprotective effect	Green tea catchins, and black tea thioflavins
Improving memory and learning skills	Theanine
Reduce the incidence Catchins of arthritis	Catchins

Blueberries (*Vaccinium myrtillus*)

Blueberries (*Vaccinium myrtillus*) are produced from a 60-90 cm tall bush with translucent and dense branch-leaves. They can be eaten either fresh or dried, with the latter being the most popular. The high quantity of anthocyanins, which are phytochemicals with potent antioxidant properties, is what gives the area its deep blue-purple hue. Blueberries are currently categorized as superfoods following a number of surveys and studies. By lowering symptoms like loss of balance and coordination and preventing memory loss, blueberries' contribution to brain function appears to be linked to a lower chance of developing Alzheimer's disease and other neurodegenerative disorders.

Health benefits of Blueberries

Decrease of neurodegenerative polyphenols and cerebral function, particularly Anthocyanins in blood pressure and diseases Prevention of different kinds of cancer by flavones, flavonoids, tannins, and phenolic substances luteolin with kaempferol Diarrhea and constipation Fibers in the diet Proanthocyanidin infection and protection against the hepatitis C virus prevention of the urinary tract.

Ginger Root (*Zingiber officinale*)

Originating in South Asia, ginger is now grown in practically every tropical nation. Its fleshy rhizome and dense branches are derived from a herbaceous plant in the Zingiberaceae family. It is mostly composed of water (80%), but it also has enough levels of potassium, zinc, and polyphenols. Ginger contains the following nutrients per 100 g: 41 mg magnesium, 2 mg copper, 415 mg potassium, 34 mg phosphorus, 16 mg calcium, sodium 13 mg, vitamin C 5 mg, folate 11 µg, 0.4 g fat, 18 g carbohydrate, 2 g fiber, and 2 g protein. (Srinivasan K *et al*., 2017) [8].

Health benefits of Ginger root

The potent medicinal herb ginger root (*Zingiber officinale*) has long been used in traditional medicine, particularly in Ayurveda and Traditional Chinese Medicine (TCM). Both contemporary scientific studies and conventional wisdom support its health benefits. The following are the main health advantages of ginger root:

Preventing cardiovascular polyphenol-related diseases Breakdown Inorganic substances potassium, zinc, anti-inflammatory properties, vitamin C, and polyphenols.

Conclusion

Superfoods contain a variety of health-promoting components that the human body uses to treat certain illnesses and improve general health. Because they contain so many beneficial ingredients, superfoods are good for the human body even when ingested in little amounts. Kefir, maca, acai, goji, hippophaes, maize, blueberries, royal jelly, spirulina, ginger, donkey milk, and pomegranate are some of the most significant superfoods that have become especially significant for human health.

The aronia plant, quinoa, blackberries, and other superfoods have also been documented in the literature. It has been demonstrated that the main advantage of superfoods is their high antioxidant content, which includes polyphenols, carotenoids, and vitamins A and E. Normal biological processes cause the body to produce free radicals, but an excess of them can be harmful, accelerating the aging process and raising the risk of many diseases, by damaging healthy cells.

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