

New insights on Nutritional Benefits and Health impacts of Superfoods

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Abstract:

The global rise of various metabolic diseases including diabetes, obesity, chronic inflammation is alarming. It has always been observed that combination of healthy food choices is the fundamental of optimal nutrition and health. However, there are few foods that have gained special recognition known as superfoods. Superfoods are claimed to have an edge over the common food, offer increased nutritional efficiency and enhance a healthy eating pattern. They are rich sources of crucial nutrients, bioactive components and potential in the preventing various diseases. The study aims to explore the nutritional benefits and health impacts of superfoods for humankind. The present work focused on some of the important superfoods including berries, fish, nuts, green leafy vegetables, olive oil, yogurt, cruciferous vegetables etc. The nutritional benefits of these superfoods along with their health claims have also been stated. The need and value with respect to the therapeutic and economic aspects of the superfoods are reported in the present review in accordance with the current and relevant data.

Keywords: Superfood, food, nutrients, antioxidants, disease, health.

Introduction

A healthy diet is one of the most essential key drivers of

maintaining a healthy life overall. In stark contrast, an unhealthy diet can lead to an alarming range of health problems such as anemia, obesity, cardiovascular diseases, metabolic syndrome, and even certain types of cancer. It is crucial to understand that most chronic health problems that individuals face result primarily from nutritional issues of various kinds. Malnourishment encompasses various forms, which not only include severe overnutrition or undernutrition but also the consumption of unhealthy food options. On the positive side, many healthy foods have the ability to help prevent and manage chronic diseases effectively. These foods, particularly those that are high in important health-boosting vitamins, essential minerals, and beneficial bioactive compounds, are sometimes classified together as superfoods. The concept of superfoods has gained immense popularity and attention, becoming a trending topic in online search data and the media alike. Examples of such superfoods include cocoa, kale, salmon, blueberries, acai, beetroot, nuts, quinoa, and chia seeds, all of which offer a plethora of health benefits and contribute significantly to overall well-being. (Hacker et al.2021)(Vijay & Valdes, 2022)(Crosby et al.2021).

Not all foods possess remarkable natural superpowers; however, scientists remain actively engaged in exploring the potential of good food to assist us in combating various diseases and achieving a multitude of health goals. In this ongoing research, they meticulously examine the nutrient content of different foods, investigate how these foods interact with diseases, and conduct human trials to assess these potential health benefits. Additionally, they are keenly interested in observing the effects of these foods on the entire body, rather than focusing solely on specific cells or chemicals. This holistic approach is crucial because the journey of a nutrient, from the moment it enters the mouth to its ultimate destination in the cells, is both long and intricate. Key processes such as digestion, gut fermentation, and any adverse effects on the body are also carefully considered in this complex equation of health and nutrition. Each step along this pathway can significantly influence how effectively our bodies utilize various nutrients and how those nutrients contribute to our overall well-being. (Rahman et al.2021) (Ashraf et al.2021).

Understanding Superfoods

Definition and Characteristics

Today, the term “superfood” refers to a specific group of foods with potential health benefits and is frequently used in the scientific literature, as well as in social and lay discourses. However, there is no legal definition for foods labeled as superfoods, thereby leading to food misrepresentation and consumer fraud. Three definitions for the term are: (i) descriptive, where a superfood is any food that provides health benefits; (ii) normative, which is narrower and suggests a specific product having high concentrations of multiple beneficial nutrients; and (iii) qualitative, which includes food safety concerns in the definition, as superfoods are minimally processed and lack added preservatives. (Gupta & Mishra, 2021)(Kirsch et al., 2022)

However, the present study encourages the use of the descriptive definition, which covers the different nuances regarding the subject. Superfoods can be consumed in natural forms, such as seeds, grains, nuts, vegetables, and fruits, although the latter are mostly represented on the market, considering the easy commercialization of their industrialized format. Characteristics usually attributed to superfoods are a 100% natural composition, the organoleptic qualities of their flavor, and the time-consuming process of the beneficial factor acting within the organism.

Types of Superfoods

Superfoods encompass a wide variety of items, which include not only the widely recognized coffee and tea but also a diverse selection of fruits like apples, oranges, grapefruit, and grapes. Watermelon, with its high-water content, is another essential superfood, along with leafy greens such as lettuce. Carrots, tomatoes, and cucumber are equally important to this group, as they provide an array of nutrients. Brussels sprouts and green beans add to the roster, as does the common potato, which can offer unique health benefits when prepared in certain ways. Garlic and onions are known for their health-promoting properties, while beets and cauliflower contribute to overall well-being. Zucchini, strawberries, and various

types of berries round out this incredible list, including a selection of dried fruit. Nuts also hold a significant place within the superfood spectrum, highlighting almonds, walnuts, and peanuts, along with citrus seeds that offer additional health benefits. These superfoods exhibit functional interactions rooted in their rich content of flavonoids, folate, flavanols, sterols, and anthocyanins. Furthermore, they possess non-nutritive substances, such as probiotics, that are essential for gut health. In addition, superfoods are abundant in carotenes and carotenoids, substances that have garnered attention for their proposed ability to prevent metabolic syndrome. These nutritional treasures contribute significantly to promoting healthy activities, enhancing microcirculation, which ultimately yields substantial benefits for the eye and brain. This improvement plays a vital role in boosting muscular energy and overall stamina for various physical endeavors. (Sharma et al.2022)(Jagdale et al.2021)(Fernández-Ríos et al.2022).

Although superfoods are not a substitute for physical activity and a healthy lifestyle, they are essential to prevent and control chronic degenerative diseases and thereby increase life expectancy in humans, improving productivity, avoiding excessive medical care, increasing energy in muscles, and reducing metabolic stress. In addition, superfoods are able to carry out tasks that confer other health benefits, such as improving mood, appraisal, memory, and cognitive function. The great benefit of the consumption of superfoods is shown in the appropriate daily intakes that are established with a low-cost diet and which is easily incorporated into cultures where food is an important vehicle for improving health. In summary, superfoods are essential to the human diet. (Arumugam et al., 2021).

Nutritional Benefits of Superfoods

Rich in Antioxidants

The most typical example to illustrate the antioxidant activity of nutraceutical compounds found in superfoods is L-ascorbic acid, which is present in citrus fruits. Vitamin C and the bioflavonoids in citrus fruits like lemon, orange,

and grapefruit have been evaluated for their contribution to reducing the activity of lipopolysaccharide-induced reactive oxygen species in the hippocampus of rats. All these compounds actively scavenge superoxide anion and hydrogen peroxide. In addition, the antioxidant efficiency is due to the interaction of ascorbic acid and the bioflavonoids in a reciprocal way, protecting and regenerating each other. The efficacy of this cooperation between ascorbic acid and bioflavonoids in rats indicates that biosynthesis could develop to store both substances in citrus fruits with the purpose of competition for better protection against pathogens. (Dadwal and Gupta2023)(Wang et al.2022).

The antioxidant active ingredient in matcha is L-ascorbic acid, present at higher levels than in other green teas. As L-ascorbic acid is known to increase the activity of related cellular energy regenerating as nucleotide instabilities, which are protected from oxidative damage by vitamin C, it plays a significant role in fostering the immune system against ailments. The antioxidant activity of a dietary supplement containing cape gooseberry was investigated as an immunostimulating agent in non-clinical immunotoxicology and compared with that of green tea. The content of specific antioxidants such as tryptamine, vitamin C, and vitamin A promoted strong and synergistic protective properties against oxidative stress. Furthermore, the mixture of antioxidants increased the SOD, CAT, glutathione, and NO amounts and decreased the level of TGFβ1. These findings suggest that the dietary supplement containing cape gooseberry can counteract oxidative stress and inflammation as an immunostimulating agent. Superfoods rich in vitamin C, such as broccoli, cantaloupe, kiwifruit, sweet potatoes, and leek, also have positive effects when it comes to potentially protecting the skin from the damaging effects of UV radiation. (Ahmed & Mikail, 2024) (Moskwa et al.2023).

High in Essential Nutrients

Superfoods are widely recognized as superior foods owing to their unique bioactive components. In addition, the majority of superfoods generally possess a greater amount of essential macro- and micronutrients that are part of a healthy diet, which

are typically difficult to obtain from a regular diet. Soybeans are a good quality, readily available, and cheap source of protein and contain various bioactive health benefits. They provide a complete source of essential amino acids, as well as essential lipids, for which they have the highest protein content. Raspberries are particularly high in dietary fiber and vitamin C levels. Papaya is high in fiber and vitamins A and C, and is a particularly good source of vitamin A. Papaya also provides calcium and contains iron, vitamin B6, and vitamin B3. Kakadu plum is rich in minerals as well as high levels of vitamin C. Goji berries have calcium, iron, vitamins C and A, fiber, zinc, antioxidants, and carbohydrates. Sweet corn is rich in vitamin C, beta-carotene, vitamin B, pantothenic acid, niacin, dietary fiber, folate, biotin, riboflavin, and zinc. Grapes are rich in vitamin C, vitamin K, vitamin E, vitamin A, iron, sodium, potassium, copper, magnesium, and calcium. Spinach is a great source of manganese, zinc, magnesium, iron, copper, calcium, sodium, fiber, and folate. Blueberries are high in manganese and vitamin C, vitamin K, vitamin A, vitamin E, and dietary fiber. Strawberries are super high in manganese and vitamin C, flavonoids, quercetin, and kaempferol. They are also a good source of folate and potassium. The superfoods kale, alfalfa, and sorghum are found to be rich in beta-carotene, calcium, fiber, fatty acids, nucleic acids, protein, zinc, and vitamin C. (Fernández-Ríos et al.2022)(Jagdale et al.2021).

Health Impacts of Superfoods

Superfoods are receiving attention for reducing the risk and progression of chronic degenerative diseases. The consumption of red wine, garlic, green tea, broccoli, and spinach has been linked to a lower risk of certain types of cancer. Functional foods contribute to the maintenance of health and physical and mental activities. Among food groups known as functional, cereals are the most important, providing over 56% of dietary intake. However, the lower consumption of so-called novel products such as algae, fish, and seafood means that their beneficial impacts and potential side effects are not well established. The aim of this work is to analyze the literature and provide an overview of some

novel products defined as superfoods. Therefore, the chapter is structured to present their nutritional significance and beneficial impacts, focusing on the health impacts through the fortification of these products. Fruits and vegetables have been reported for their contribution to health and nutrition, being sources of minerals, dietary fiber, and vitamins along with bioactive compounds. Some foods are recognized as superfoods by their potential for preventing or treating health conditions thanks to the high level of bioavailable nutrients or bioactive compounds they contain alongside their antioxidant capacity. The presence of specific bioactive compounds such as flavonoids, phenolic acids, carotenoids, or phytosterols is considered to have effects beyond the nutritional content of the food. The intake of these bioactive compounds is associated with antioxidant, anticarcinogenic, and antibacterial effects; support for the cardiovascular system; osteoporosis prevention; avoiding cataracts; and improving neurodegenerative conditions. (MacGregor et al.2021)(Cobos & Díaz, 2023)(Jagdale et al.2021).

Weight Management

Consumers increasingly demand food products that lead to weight control and help them lose weight without negative health consequences. This is particularly significant in high-income countries where obesity levels are high and in emerging middle-income countries where the prevalence of overweight and obesity is becoming increasingly present. The worst part is that people continuously look for passive ways to combat this increased body weight and fat and are less willing to increase physical activity or follow a healthier diet to lose weight in a safer and more long-lasting manner. However, healthy weight management leads to lifelong benefits in helping our body, and anyone who has experienced being overweight or obese knows how frustrating it is. Consumers are increasingly looking for reliable solutions to this concern, and they have discovered in weight-loss and weight-control diets a business opportunity. Weight management trends are endless, and the foods and food ingredients that promise distinct weight management outcomes are growing exponentially. Some have never been studied for such effects; others may have marked side effects in the long term.

An important strategy to enhance satiety and extend the fullness effect is to consume foods rich in dietary fiber. This is a strategy recommended by doctors and other health professionals worldwide, who generally want their patients to opt for the less dense, more nutritious choice to combat this health concern. Greenfresh adopted this strategy well. However, fiber-enriched products have a bad reputation in terms of taste and texture, and consumers often reject them even when potential benefits are clearly claimed. This group includes many superfoods such as cereals and pseudocereals, legumes, fruits, and vegetables, which can help in controlling weight, preventing excess weight gain, and in some situations, help to promote permanent weight loss, provided that a healthy lifestyle is maintained in the long term. These products have sensory attributes and positive effects on health that make it easy to include them in the daily diet of overweight individuals. They are whole grain foods, with the whole grain composition and proportion maintained from the natural ingredient. The scientific literature, however, reports discrepant results, with some studies indicating that whole grains do not promote any beneficial effects on weight management.

Recent Research and Findings

A recent search on the topic of superfoods revealed a series of articles that highlighted some proven concepts about this category of foods. According to these articles, scientific reality shows a subtler side. Yes, some superfoods are packed with nutrients, and those nutrients can be densely packed, but the scientific evidence of their specific health benefits is less certain. Moreover, rather than whole foods like fruits and vegetables causing us to live longer and healthier lives, it's more likely that the synergy of all the many compounds in the wide variety of plant-based foods we consume contributes to this healthy life. It's important to note that we're not saying these foods aren't healthy — because they are.

Most whole foods are good for you. It's just that some are better for you than others. Want maximum immunity? Eat plenty of colorful fruits and vegetables. Medicinal claims require much more than a quick scientific check. Unlike

drugs, which require specific, clear data, dietary supplements are treated more like food. Supplement makers have to follow good manufacturing standards and notify if they make health claims. However, a quick scan suggests it's a stretch to extract an entire health-respecting lifestyle from single fruity or rooty ingredients and red or blue fruits. There is a set of super-healthy foods that are recommended for health. These foods may be derived from any healthy lifestyle or from various patterns recommended by public health agencies.

Conclusion

In summary, superfoods are defined by their superior and sheer number of nutrients, after so many years of marketing some might still be surprised with how many superfoods are available and how many more could enter the stage. We have health claims in the horizon for some, but safety concerns also on the horizon for others. Nonetheless, the main issue at stake with superfoods is how to include them properly in a diet because overconsumption does not make them super at all and their large expenses might prohibit other necessary food purchases. Those are not minor problems at all in a country where 33.5% of the people are overweight and 18.5% obese, conversely to 1983 in which 32% were seedy and 14% malnourished. Superfoods, national and international food trends, food marketing of trademarks and certification do play an important role in this nutritional area, particularly in developed countries.

It is known that as health as wealth are improving, so are the food markets. Hungarians are aware of artificial sweeteners not being sugar, but prefer sugar among the two; that artificial sweeteners are artificial, sweet and include the moniker of sweetener is enough for them to trigger any attempt to control what is eaten. The industry tries again to circumvent the problem with a new kind of sweetener out of stevia, a South American plant with that same sweet moniker. Natural origin is promised and suggested to exist, there is no clear knowledge that either statement belongs to the truth when a commercial sweetener is in question. Natural stevia rhymes with natural flavouring in a lot of people's minds, meaning that in the nature of things, finding it in the nature of the food

is much the same. Therefore, concern and dare for related food-related carcinogenesis should include stevia. Therefore, presently, healthy sweeteners mean those found in fruits and some vegetables. Stevia is for some people considered a superfood and therefore we end this communication as we began it, by calling attention to the matter.

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