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Nutritional Management of Obesity and Type 2 Diabetes

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Description

Body mass index (BMI), which is used to define obesity, is still a serious problem in the US. In the United States, there are currently 42% of people who are obese, according to the Centers for Disease Control and Prevention (CDC). Plotting the prevalence of obesity against time reveals that it is in a period of linear development with no signs of decreasing; based on present patterns, a recent study predicts that the prevalence of obesity will reach 50% by 2030. In addition, over the past 20 years, the prevalence of extreme adult obesity (BMI > 40) has doubled. Minorities, women, and people with lower socioeconomic level are more likely to be obese [1].

Numerous health issues, such as insulin resistance and the ensuing type-2 diabetes, are linked to obesity. About 11% of the US population (34.2 million people) had diabetes in 2018, which is defined as a fasting blood glucose level above 126 mg/dL or a haemoglobin A1c level above 6.4%. 90-95% of cases were type-2 (adult-onset/insulin-independent) diabetes. The majority of the cost associated with these conditions is attributable to the use of prescription drugs to treat their comorbidities, making them an expensive burden to the healthcare sector. With the exception of invasive surgeries, contemporary medicine does not have a treatment for obesity and type-2 diabetes that is as effective as a healthy diet and regular exercise. Researchers in a wide range of agricultural and life sciences fields are interested in creating food items that could improve human health as a means of enhancing our food supply. A key component of this paradigm is bioactive food components, which have the potential to go beyond basic nutritional requirements and whose chronic consumption may improve health and longevity while reducing the risk of age-related, noncommunicable diseases like diet-related obesity and type 2 diabetes [1,2].

Quinoa is one possible food crop that has drawn a lot of interest in the last ten years due to its high nutritional and bioactive potential. The Amaranthaceae family includes quinoa (*Chenopodium quinoa* Willd.). Despite being underutilised by industrialised agriculture, quinoa has been grown for thousands of years in South America. Its growing popularity is partly due to its wide adaptability and agronomic versatility, which allow it to be grown at sea level or at an altitude, in marginal soils with low pH and high salinity, and in a variety of precipitation zones. Quinoa has a large genetic variety with hundreds of distinct kinds, landraces, and genotypes, each with a unique chemical makeup and set of physicochemical characteristics. Varieties with distinctive flavour, texture, aroma, and colour profiles that are specially tailored for various end uses, such as grain bowls, bread, pancakes, cakes, beverages, noodles, and many other processed and extruded foods, are a result of this genetic variety. It has a rich nutritional profile, including an appealing essential amino acid profile, and is a good source of dietary fibre, B vitamins, essential fatty acids, and polyphenols, in addition to its vast and varied end uses and potential for production on a worldwide scale [3].

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Quinoa is a food with a distinctive nutritional profile that offers important nutrients, fibre, and phytochemicals. It is regarded as a functional food because it promotes human health and longevity beyond the traditional understanding of physiological homeostasis provided by adequate intake of macro- and micronutrients. There is a fresh chance to produce quinoa types that are guided by their potential to maximise human health. As an illustration, the ability of Washington state quinoa varieties and breeding lines to satisfy the daily requirements for all age groups can be taken into account while choosing and developing breeding lines. Additionally, a thorough summary of the many class of plant metabolites found in quinoa that may improve human health has been provided. Quinoa is an example of a functional food that may offer protection against cardiometabolic disorders brought on by a poor diet and inactivity. A review of the most recent scientific research on quinoa consumption as an addition to dietary management techniques for obesity and type 2 diabetes is necessary given the prevalence of both conditions in the United States. This literature review's objective is to highlight both the translational and clinical research that looked into the potential of quinoa or one of its ingredients to treat metabolic disorders linked to obesity and diabetes [4].

The metabolic side effects of type 2 diabetes and obesity may be prevented by a number of quinoa constituents. Its fibre, protein, 20HE, and polyphenol levels are examples of potential ingredients that might be improved through breeding and study on the processing of food ingredients. To verify the preliminary findings presented here, highly controlled trials in both rats and people are required. Indirect calorimetry, glucose tolerance, and body composition must be the main outcomes of future research [5].

Conflicts of Interest

The authors declare no conflict of interest.

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