# Plant-based diets and chronic disease prevention: A review of recent evidence.

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## Introduction

The global burden of chronic diseases such as cardiovascular disease, type 2 diabetes, and certain cancers has prompted increased interest in dietary strategies for prevention and management. Among these strategies, plant-based diets have emerged as a promising approach supported by a growing body of scientific evidence. A plant-based diet emphasizes the consumption of fruits, vegetables, whole grains, legumes, nuts, and seeds, while minimizing or excluding animal products. Recent studies suggest that adopting a plant-based dietary pattern is not only beneficial for individual health but also contributes to environmental sustainability [1].

Plant-based diets are typically low in saturated fats and cholesterol and rich in dietary fiber, antioxidants, and phytochemicals, which collectively improve lipid profiles, lower blood pressure, and reduce inflammation [2].

Mechanistically, the high fiber content of plant foods slows glucose absorption, improves insulin sensitivity, and supports a healthier weight. Clinical trials have also demonstrated improved glycemic control in patients with diabetes following vegan or vegetarian diets [3].

The role of diet in cancer prevention is complex, but plant-based diets show protective associations, particularly for colorectal, breast, and prostate cancers. Whole plant foods contain compounds like flavonoids, carotenoids, and lignans, which exhibit anti-inflammatory and anti-carcinogenic properties. Additionally, high fiber intake from plant foods is linked to a reduced risk of colorectal cancer by promoting gut health and faster waste elimination [4].

Obesity is a major risk factor for chronic diseases, and plant-based diets have been shown to aid in weight management. A systematic review of randomized controlled trials found that individuals on plant-based diets lost more weight than those on omnivorous diets, even without calorie restriction. The lower energy density and higher satiety of plant foods contribute to reduced calorie intake and improved metabolic outcomes [5].

Emerging research highlights the role of gut microbiota in mediating the health benefits of plant-based diets. Diets rich in plant fiber foster a diverse and beneficial microbial environment, producing short-chain fatty acids that have anti-inflammatory and immune-modulating effects. Conversely, high consumption of red and processed meat is associated with pro-inflammatory gut bacteria and increased disease risk [6].

While plant-based diets offer numerous health benefits, attention must be given to potential nutrient deficiencies, particularly in strict vegan diets. Nutrients of concern include vitamin B12, iron, calcium, omega-3 fatty acids, and vitamin D. However, with proper planning, these nutrients can be obtained through fortified foods or supplements [7].

In addition to individual health advantages, plant-based diets contribute to environmental sustainability. Livestock farming is a significant contributor to greenhouse gas emissions, land degradation, and water use. Transitioning toward plant-based eating patterns can reduce the environmental footprint of food systems and support global climate goals [8].

Plant-based diets are also effective in preventing and managing type 2 diabetes. The Adventist Health Studies and other large cohort studies have shown a 34–53% lower risk of diabetes among vegetarians compared to non-vegetarians [9].

One of the most robust areas of research on plant-based diets concerns cardiovascular disease (CVD). Epidemiological studies consistently show that individuals following vegetarian or predominantly plant-based diets have a significantly lower risk of coronary heart disease and hypertension [10].

## Conclusion

The evidence supporting plant-based diets for the prevention and management of chronic diseases is compelling. From reducing cardiovascular risk and managing diabetes to lowering cancer risk and promoting healthy weight, plant-based eating represents a practical, evidence-based strategy for improving public health. While nutrient planning is essential, especially for those excluding all animal products, the benefits of increasing plant food consumption far outweigh the challenges. As the world grapples with both chronic disease and environmental crises, plant-based diets offer a sustainable solution for human and planetary health.

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***Received:** 03-Apr-2025, Manuscript No. AAJFSN-25-165451; **Editor assigned:** 04-Apr-2025, PreQC No. AAJFSN-25-165451(PQ); **Reviewed:** 17-Apr-2025, QC No AAJFSN-25-165451; **Revised:** 22-Apr-2025, Manuscript No. AAJFSN-25-165451(R); **Published:** 28-Apr-2025, DOI:10.35841/AAJFSN-8.2.291*

***Citation:** Xie Z. Plant-based diets and chronic disease prevention: A review of recent evidence. J Food Sci Nutr. 2025; 8(2):291*

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***Citation:*** *Xie Z. Plant-based diets and chronic disease prevention: A review of recent evidence. J Food Sci Nutr. 2025; 8(2):291*