

Growth of Plant-based Protein



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A growing public health and environmental concern has led to a shift towards a more plant-based diet. Within this movement, protein has been a key target for change.

The majority of protein intake comes from animal sources including meat, eggs, and dairy, all of which also contribute to higher greenhouse gas emissions and an environmental impact. Data has shown that vegetarian alternatives of cheese, meat and fish may impact the environment less⁽¹⁾.

Health concerns are another key reason for shifting towards plant-based protein sources. Different types of proteins, from various sources each have different effects on health. Studies report that the slope of protein consumption in the Western population is as the following: meat-eaters > fish-eaters > lacto-ovo-vegetarians > vegans⁽²⁾. Contrary to the common misconception of not having a complete set of essential amino acids from plant-based proteins, it has been emphasized that including protein from diverse plant sources such as grains, nuts, legumes, and soy could help reach the necessary amino acid requirements⁽³⁾. Including diverse plant-based foods not only gives consumers amino acids, but it provides other nutrients such as fiber, antioxidants, vitamins, and minerals (3). In the case of animal protein, nutrients such as saturated fatty acids and cholesterol are also provided and these have been proven to have negative health effects.

“The future will be plant-based.”

Plant-based protein sources such as nuts, legumes, and soy have all shown anti-inflammatory and lipid-lowering properties⁽⁴⁾. Lysine and arginine, two amino acids from animal and plant protein sources, have also shown the potential to play a role in the regulation of blood lipids. However, there are several hypothesized negative impacts of consuming animal protein⁽⁵⁾. Lysine, which is more prevalent in animal proteins has been shown to increase cholesterol levels in animal trials. In contrast, arginine, which is found more commonly in plant proteins, has been shown to have the opposite effect^(5,6) and has beneficial effects on endothelium. Similarly, carnitine, commonly obtained from meat and dairy, has also been associated with the development of metabolic diseases through the formation of acylcarnitine⁽⁷⁾. Another potential mechanism by which protein could have different effects depending on the source is via gut microbiota modulation which has shown to affect metabolism.

Legumes and pulses are also interesting plant-based protein sources that provide up to 15-30% of their energy to protein⁽⁸⁾. Moreover, legumes with their rich nutritional composition of bioactive compounds, have been shown to have



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protective effects against cholesterol and cancer⁽⁹⁾. On the other hand, meat consumption has been associated with increased risks of cardiovascular and cancer mortality^(10,11). In an 11-year long Melbourne Collaborative Cohort, it was seen that red meat, or chicken intake was positively associated with metabolic syndrome (a constellation of metabolic disorders associated to abdominal obesity) incidence, whereas legumes and nuts had an inverse association with the incidence of this syndrome⁽¹²⁾. They also observed that a 5% increase in animal protein intake, was associated with a 0.97 cm increase in waist circumference and a 0.97 mmHg increase in systolic blood pressure.

Nuts are nutrient dense plant protein sources that have shown consistent benefits in reducing coronary heart disease. The PREDIMED study, a large randomized control trial for the primary

prevention of cardiovascular disease, showed that increased frequency of nut consumption is significantly associated with reduced mortality in populations with high cardiovascular risks. A meta-analysis looking at 25 observational studies and two trials, including 14,449 diabetic incidents, reported that 4-weeks of consuming 28.4 g of nuts is associated with 12% decrease in risk for diabetes⁽¹³⁾. This effect is observed through its dose-dependent and lipid lowering potential for people with higher LDL-c level⁽¹⁴⁾. Nut consumption is also associated with a lower risk of developing type 2 diabetes in some, but not all observational studies, and a decrease in insulin resistance through clinical trials. High fiber and magnesium composition in nuts is a possible cause of decreased insulin resistance⁽¹⁵⁾.

The growing interest in plant-based proteins has given a significant

opportunity to the food industry to explore the versatility of nuts, legumes, soy and pulses as plant-based substitutes for animal-based products. Since 2015, and up to 2019, over 4,400 products have been launched worldwide as alternatives to animal-based products⁽¹⁶⁾. Furthermore, it is important for the regulatory bodies to stay up-to-date with the growth of plant-based proteins so they can to provide the consumers with clear information and allow them to make an informed decision. Overall, in addition to the growing alternative protein market replacing meat and dairy products, consuming natural plant-protein sources such as legumes, nuts and pulses would be a convenient choice for consumers. Even though a complete change towards a plant-based diet might be a personal choice, moving towards a less animal-based diet would be an ethical and nutritional recommended option. ■

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