



The Emerging Trend of the Plant-based Diet

Understanding the nutritional considerations



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What is a plant-based diet?

A plant-based diet is a dietary pattern in which energy and nutrient requirements are predominantly met through plant foods. Plant-based diets therefore minimise or remove animal-derived food and food products, such as meat, fish, dairy and eggs. Plant-based diets can include dietary patterns known as flexitarian, pescatarian, vegetarian and vegan.

The number of people following a plant-based diet is growing in the UK and worldwide.¹ An estimated 3% of people identify themselves as vegan in the UK, but the trend towards reducing animal foods as part of a non-vegan dietary pattern is growing, particularly among younger consumers. Based on a study in 2021, it is estimated that the number of people moving towards a plant-based diet will continue to grow, with 19-22% of UK consumers planning to eat more alternatives to meat and dairy in the coming months.²

Why do people choose a plant-based diet?

According to Veganuary, the main reason for participants adopting a fully plant-based (vegan) diet is concern over the treatment of animals in the farming industry. The second and third most popular reasons were personal health and the environment. Other reasons included: for a personal challenge, global health (such as concerns over future pandemics), and for a loved one.³

Plant-based diets for human health

Moving towards an increasingly plant-based diet with fewer animal-derived foods is associated with a variety of health benefits.⁴ It has been estimated that unhealthy diets are responsible for 26% of deaths globally, and 31% of premature deaths in Europe,⁵ making them the leading risk factor for premature death. Dietary risk factors include high intake of sodium and low intake of plants such as whole grains, fruits,

nuts, seeds and vegetables.⁶ Plant-based diets have been found to be protective against coronary heart disease,⁷ colorectal cancer,⁸ and diabetes.⁹ In fact, the global consumption of red and processed meat specifically has been linked to 2.4 million deaths and \$285 billion in healthcare costs in the year 2020.¹⁰ The health benefits derived from balanced plant-based diets can be attributed to the higher intake of dietary fibre, complex carbohydrates, phytochemicals and water. Plant-based dietary patterns also provide a low intake of saturated fats, free sugars and other substances linked to chronic disease including nitrates, haem iron and those created when cooking meat at a high temperature, for example heterocyclic amines.¹¹ Despite common concerns over the potential risk of nutrient deficiency, the British Dietetic Association have confirmed that a balanced plant-based diet can provide all necessary nutrients to support health at any life stage.¹²

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Plant-based diets for planetary health

The global food supply is the single largest driver of environmental degradation, and the EAT Lancet report states that a radical transformation is needed urgently to avoid failing to meet the UN Sustainable Development Goals and the Paris Agreement.⁴ Every stage of the global food system, from growing and harvesting crops to land fill, has a dramatic impact on the environment through greenhouse gas emissions, water use, land use, depletion of marine life and biodiversity loss, and the unnatural nutrient enrichment of water leading to harmful algal blooms, known as eutrophication.¹³ The 2018 IPCC report emphasises that livestock is the largest contributor to dietary greenhouse gas emissions and that reducing our intake of meat and dairy and replacing with plant protein alternatives is crucial to meet global warming targets. In fact, a reduction in current UK consumption of total meat (>100 g per day) to below 50 g per day would result in a 39% reduction in our carbon footprint.¹⁴

The EAT Lancet report states that ‘a diet rich in plant-based foods and with fewer animal source foods confers both improved health and environmental benefits’, and advises a doubling in the consumption of fruits, vegetables, legumes and nuts, and a halving in the consumption of added sugars and red meat.⁴

Nutritional considerations on a plant-based diet

Although a plant-based diet can meet all of our nutritional needs, much like any other diet it is important to ensure the diet is balanced.

Protein

As humans we require nine essential amino acids in our diet. Plant proteins have historically been considered as ‘lower quality’ or ‘incomplete’ because, in contrast to animal proteins, they do not contain all nine amino acids in one food. Plant proteins are typically low in one amino acid; however, they are not all low in the same ones. Therefore, including a variety of different plant foods, such as grains and legumes, across the day or week will provide all essential amino acids. Although protein intake is somewhat lower on a plant-based diet, it is typically over-eaten in the UK, and so this reduction in the healthy population is not of concern.¹⁵

Calcium

As dairy is a main source of calcium in the UK, it is important to ensure calcium remains adequate when dairy is removed. Those on a plant-based diet do not appear to be at risk of weakened bones if calcium remains sufficient.¹⁶ Fortified plant-based milk alternatives provide a level of calcium comparable to cow’s milk at 120 mg per 100 ml. Other sources include calcium-set tofu, tempeh, kale, watercress, sesame seeds, wholemeal bread and almonds.¹⁷

Omega 3s

It is common practice to recommend 2 portions of fish weekly, one of which being oily, to obtain sufficient omega 3 fatty acids, but concerns continue to increase regarding the health and sustainability of consuming fish due to pollutants, plastics and over-fishing. Short-chain omega 3 fatty acids (ALAs) are available from plant foods such as ground linseed and walnuts.¹⁸ These convert into the important long-chain fatty acids (EPA and DHA) in our bodies, however the conversion rate may be slow. Fish obtain their EPA and DHA from algae, a plant-like marine organism, and so another option is to go straight to the source and take an algae oil supplement.

Iron

Iron deficiency anaemia affects 14-23% of women in the UK, irrespective of dietary pattern. Those following a plant-based diet do not appear to be more at risk but should continue to be mindful of getting the recommended 14.8 mg per day.¹⁹ Iron is available in 2 forms; **haem** iron from animal foods, and **non-haem** iron from plants. **Non-haem** iron is abundant on a plant-based diet, but generally less-well absorbed than **haem** iron. Absorption can be significantly increased when pairing iron-rich foods with sources of vitamin C that are plentiful in a plant-based diet. Plant foods high in iron include baked beans, pumpkin seeds, spinach, sesame seeds, tempeh and quinoa.¹⁷ Vitamin C rich foods include strawberries, kiwi, peppers and peas.

Selenium

A plant-based diet may lead to a lower intake of selenium, however just 2 Brazil nuts provide the recommend daily intake. If Brazil nuts are not consumed, a supplement of 60-75 µg is recommended.

Nutrients abundant on a plant-based diet

Although there are some nutrients to be mindful of as described above, a plant-based diet is rich in many other nutrients that may be deficient in other dietary patterns. Fibre, polyunsaturated fats, folate, vitamin C, vitamin E and magnesium intake is generally higher on a plant-based diet compared to those eating meat.¹⁶

Supplements

Supplementation of nutrients that are more challenging to meet through a food first approach can be an important part of any diet to support nutritional adequacy. In fact, many nutrients are already supplemented in a standard diet through the use of food fortification, for example calcium and iron in flour and cereal.

Vitamin D

Everyone should consider a 10 µg supplement of vitamin D during the winter months, and all year round if at increased risk of deficiency; this applies to all dietary patterns.

Vitamin B12

Vitamin B12 is required in small quantities in the diet. It is made by bacteria found in soil and in the gut of ruminant animals, and therefore is not available in a 100% plant-based diet. For this reason, anyone following a fully plant-based diet is recommended to supplement with at

least 10 µg of B12 daily, or 2000 µg weekly. This also applies to anyone with a reduced ability to absorb B12, such as the elderly.

Iodine

Iodine is another mineral that is commonly deficient in the UK. Intake is predominantly from dairy and eggs as well as fish. On a plant-based diet, it is recommended that iodine is obtained through a 150 µg daily supplement or through fortified products such as plant-based drinks or iodised salt. This can be viewed as no less natural than feeding supplements to animals prior to consumption of their milk or meat. Seaweed is also a source of iodine, but due to the variable content and the detrimental impact of having too little or too much, it is not recommended to be relied upon as an independent source.²⁰

Plant-based diets in malnourished patients

With ethical veganism now qualifying as a philosophical belief under the Equality Act 2010, a fully plant-based or vegan diet should be available for any patients requiring dietetic support, including older adults and malnourished populations. Common issues within these groups include altered appetite, increased energy and protein requirements, and reduced dexterity or dentition. Unfortunately, **challenges remain due to the poor availability of high energy plant-based**

meals and snacks in healthcare settings, the limited range of plant-based oral nutritional support, and the varying level of knowledge and skill in practising dietitians.

There are many beneficial plant-based foods that can be used in the dietetic support of malnourished patients. Plant-based dairy alternatives are varied in nutritional profile, but many can be a useful source of energy and protein content along with added vitamin B12, vitamin D and calcium, for example fortified soya milks. Regular protein-rich plant foods such as tofu, tempeh, beans, lentils, nut butters and seeds are essential in supporting protein intake. Food fortification can be achieved using high fat plant foods, including plant oils, avocados, coconut cream, seeds and nut butters. At-risk nutrients as described above should be considered and covered using fortified plant-based products and supplements as appropriate.

A predominantly or fully plant-based diet can have significant advantages for both human health and planetary health. As with any diet, planning is required to maintain nutritional adequacy, but with the use of plant proteins, fortified dairy alternatives and a diverse intake of plant foods, a plant-based diet can follow the principles of the Eat Well Guide (2016) and meet nutritional requirements at any age or life stage.¹¹

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