

Nutritional and Health Benefits of Plant-Based Eating

6th International Congress on Vegetarian Nutrition, Loma Linda, California



Eating a plant-based diet consistently shows nutritional and health benefits according to research presented at the recent 6th International Congress on Vegetarian Nutrition.

The evidence continues to demonstrate that people who eat a plant-based diet are healthier, slimmer and have a lower risk of diseases such as heart disease, diabetes and cancer.

A possible explanation for these benefits is that plant-based eating patterns are associated with a diet that's low in saturated fat, cholesterol, calories, salt and fibre. What's more, these diets are linked with a good intake of foods and nutrients important for positive health. This was supported by Professor Key, from the University of Oxford, who presented findings from a study in England which found that vegetarians have higher intakes of cereals, pulses (e.g. peas, beans and lentils), nuts, fruits and vegetables and higher nutrient intakes of healthy fats, carbohydrates, certain vitamins and minerals than meat eaters.

Health Benefits...

.....

Studies presented throughout the Congress continuously highlighted that vegetarians have lower blood cholesterol levels, blood sugars, blood pressure and body weight than non-vegetarians. All of these are important risk factors for a number of diseases, so it's no surprise that plant-based eating has been associated with a lower risk of heart disease, diabetes and certain types of cancer.

A study comparing vegetarian and meat eating populations in England found that vegetarians had a 32% lower risk of hospitalisation due to heart disease than meat eaters. This same study also suggested that vegetarians had a 10% lower risk of developing all types of cancers. These findings are not just confined to England.

Professor Fraser, from Loma Linda University, highlighted findings from the Adventist Health Study-2, which involves 96,000 subjects from all over the US and Canada. Results from this study suggest that vegetarians have an 8% lower risk of developing cancer than meat eaters.

A plant-based eating pattern demonstrating remarkable effects on heart disease risk factors is the Portfolio Diet. Professor Kendall, from the University of Toronto, explained how such a diet which includes vegetable proteins

(soy protein), soluble fibres (oats, barley, psyllium), phytosterols (sterols and stanols) and a handful of almonds, can be beneficial for blood cholesterol management. Combining these four components into one diet, the Portfolio diet, has been shown to reduce LDL-cholesterol (the 'bad' cholesterol) to similar levels brought about by cholesterol lowering drugs (statins).

Another possible reason for vegetarians experiencing better health outcomes is because of their lower body weight. In population studies, people eating plant-based diets typically have lower body weights than those consuming a non-vegetarian diet. As meat decreases in the diet, so does body weight. What's more, clinical studies have found weight loss benefits in meat eaters who switch to a vegetarian diet. Dr Bernard, from the Physician's Committee for Responsible Medicine, explained that this approach to weight loss is just as effective, and easier to maintain, than diets focused on calorie reduction. In his opinion, it's easier to follow a vegetarian diet than have to count calories, which people tend to associate with restriction.

A word about soy...

.....

Specific attention was given to soy at the Congress. Not only a good source of high quality protein, soy's also naturally low in saturated fat and contains healthy fats including the plant omega-3 fat, Alpha Linolenic Acid (ALA), making it a valuable food to include in a plant-based diet.

As well as its excellent nutritional profile, soy has been shown to have additional health benefits, possibly through the action of isoflavones (compounds that are naturally present in soyfoods). Dr Messina, Adjunct Associate Professor from Loma Linda University, explained the benefits of soy in relation to women's health.

Heart Health – soy can help support a healthy heart in a number of ways:

- Lowering blood cholesterol. Replacing high saturated foods in the diet with soy foods, helps to improve the fat profile of the diet, which in turn reduces blood cholesterol. In addition, soy protein itself can directly lower blood cholesterol by 4% to 6%.
- Improving endothelial function. The endothelium forms the inner lining of blood vessels and helps these vessels to function properly. Having an impaired endothelial function is considered a risk for heart disease. Results

from studies, involving 525 post-menopausal women, found soy isoflavones improved endothelial function in those women who had an impaired endothelium at the start of the studies.

- Reducing blood pressure. A number of studies have found that soy can lower blood pressure by levels which, in theory, could reduce the risk of stroke by 10%, heart disease by 5% and overall death by 4%.
- Slowing down the progression of atherosclerosis (narrowing of the arteries). In a 3 year trial of 350 healthy post-menopausal women, narrowing of the arteries was slowed down in the younger women (50 to 55 years) who received 25g of soy protein (equivalent to 4 servings of soy foods) a day.

Hot flushes – due to the similar chemical structure to estrogen, soy isoflavones have been found to significantly reduce both hot flush frequency and duration by approximately 50 to 60%.

Breast Cancer - there's some debate over the benefits of soy in relation to breast cancer. Firstly, there's evidence to suggest that eating soy during childhood and/ or adolescence reduces the risk of developing breast cancer later in life. Yet results from animal studies imply that soy is harmful for patients with breast cancer. Soy's safety has now been confirmed in human studies which constantly show no effect on breast cancer risk markers or on the health outcomes of breast cancer patients. As a result, the American Cancer Society and American Institute of Cancer Research now state that soy foods are safe for breast cancer patients.

A Nutritious Plant-Based Diet...

.....

Despite studies showing vegetarians generally having healthier diets than meat-eaters, there's often a perception that plant-based diets are deficient in important nutrients. Findings from the US National Health and Nutrition Examination Survey (NHANES) disputed this. This study concluded that, with the exception of zinc and Vitamin B12, vegetarians consume about the same levels of many key nutrients as meat eaters, including the 'nutrients of concern' - Calcium, Vitamin D and Iron.

To ensure a plant-based diet is both healthy and meets nutritional requirements, a wide variety of plant foods need to be eaten. This includes whole-grains, legumes

(including soy), fruits, vegetables, nuts and seeds. Eating such a diet will also ensure sufficient amounts of nutrients that are considered to be 'of concern'. For example:-

Calcium - well-absorbed calcium includes calcium fortified dairy alternatives; tempeh; soybeans; firm tofu made with calcium and nigari; green vegetables such as Pak Choi, collards, kale, broccoli; dried figs; and tahini. Dr Mangels, from the Vegetarian Resource Group in Baltimore stressed the importance of calcium in bone health. She explained that the risk of fracture in vegetarians can be reduced by ensuring calcium intake is adequate and the diet contains good sources of protein

Protein - Beans, lentils and chickpeas; soy and soy products e.g. soy dairy alternatives, tofu, soya nuts and soy mince; seeds; nuts and nut butters (e.g. peanut butter); grains such as wheat, rice and maize

Vitamin B12 - certain fortified foods e.g. yeast extract, soy dairy alternatives, breakfast cereals

Vitamin D - certain fortified foods such as margarines, soy dairy alternatives and fortified breakfast cereals

Zinc - fermented soy e.g. tempeh and miso, beans (soaking dried beans and discarding the soaking water prior to cooking increases zinc bioavailability), whole-grains, nuts, seeds and certain fortified breakfast cereals

Omega-3 fats - although vegetarian and vegan diets are typically low in long chain omega-3 fats (Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA)), Professor Sanders, from King's College in London, doesn't believe this is a concern in relation to heart health. These fats, primarily found in certain fish, are being recommended to support heart health. Despite vegetarians having lower levels of these fats, the risk of heart disease and stroke is lower than meat eaters. For this reason, in Professor Sanders' opinion, dietary requirements for omega-3 fats are likely to be met as long as sufficient intakes of the shorter chain omega-3 fat (ALA) is present. ALA is found in foods such as soybean, flaxseed, walnuts and rapeseed oils and can be converted in the body to EPA and DHA. To maximise this conversion monounsaturated fats (rapeseed oil, olive oil, nuts and avocados) should be chosen in preference to too many polyunsaturated fats from margarines and vegetable oils (such as sunflower oil) with a focus on foods that contain ALAs e.g. walnuts, linseeds, rapeseed oil and soy.

Fruit and vegetables

.....

For almost a decade, UK dietary guidance has heavily promoted the consumption of 5 fruit and vegetables per day, with no consideration being given to the origin, transport methods, or indeed packaging implications of this produce[31]. Whilst lower in environmental impact, evidence suggests that fruit and vegetable (including potato) consumption accounts for around 2.5% of the UK's total GHG emissions[32]. Garnett highlights air freighted produce, unseasonal Mediterranean style produce, prepared (trimmed or chopped) produce, and fragile or highly perishable produce as the major GHG contributors of the sector[32]. Again, purchasing contexts require consideration, as research carried out in the UK summarised that most fruit & vegetables available through major UK retailers at best only partially met sustainable guidelines, and some retailers did not offer fruit or vegetables meeting any sustainability criteria[33]. This presents a real challenge for UK consumers to make environmentally sustainable choices when buying fruit and vegetables in mainstream situations.

The future of plant-based diets...

.....

Currently the term 'vegetarian' is defined by the absence of animal products, rather than the inclusion of important foods. This makes it difficult to characterise an ideal dietary pattern; it's likely that the health benefits of a plant-based diet is due to the higher quantity of plant foods eaten rather than the complete absence of animal foods. Research now needs to identify the contribution of different foods to a healthy diet to be able to define and publish a recommended plant-based diet.

Plant-Based Eating and the Environment

6th International Congress on Vegetarian Nutrition, Loma Linda, California



Switching to a plant-based diet, while cutting down on meat and dairy, is essential if we are to successfully feed the estimated nine billion people by 2050, explained speakers at the recent 6th International Congress on Vegetarian Nutrition (February 2013 in Loma Linda).

Food production is currently putting tremendous pressure on the environment, particularly as the global demand for meat grows. Producing food requires large amounts of land, not only to graze animals, but also to grow crops to feed the animals. Subsequently these agricultural practices are placing huge strains on land availability and natural resources such as energy and water supplies. They also impact the environment through climate change (as a result of greenhouse gas emissions (GHGe), and loss of

biodiversity (through deforestation, extinction of species and pollution).

Professor Sabaté, from Loma Linda University, discussed this in relation to animals' inefficiency at converting plant crops to meat. Large amounts of energy and protein in the feeding grain are not converted to animal protein or fat, and as such are being wasted. Consequently it takes large amounts of grain to produce one kilogram of meat; for example 13kg of grain are required to produce 1kg of beef.

As global demand for animal products increases, there will inevitably be a detrimental impact on natural resources. This is neither feasible nor sustainable. One solution would be to eat more high protein plant foods directly (rather than use them to feed animals) and cut down on animal products. Many studies have found plant foods to be more environmentally friendly than animal products - requiring less land,

water and energy resources and producing fewer greenhouse gas emissions. However, a lot of these studies have based their conclusions on measurements of single foods alone, or on a theoretical diet, rather than diets actually eaten in the real life setting. To examine the benefits in the context of a whole diet, Professor Sabaté presented data from the Adventists Health Study-1. This compared the environmental impact of a vegetarian diet to a non-

vegetarian diet in approximately 34,000 individuals in California, of whom 45% were vegetarians (defined as eating less than one portion of meat a week). Comparing dietary information with environmental data from State agricultural sources found a non-vegetarian diet required 2.5 times more energy, 13 times more fertilizer, 2.9 times more water and 1.4 times more pesticides than a vegetarian diet.

Professor Soret, also from Loma Linda University, described a new study which calculated GHGe from actual diets consumed by vegetarian and non-vegetarian populations in a real life setting. Using data from the Adventist Health Study-2, which included 96,000 individuals living across the US and Canada, GHGe were calculated for five dietary patterns. This analysis found that vegans were responsible for the lowest GHGe, followed by the lacto-ovo-vegetarians (who eat dairy), next pesco-vegetarians (who eat fish), then semi-vegetarians (who eat some meat), with non-vegetarians producing the largest amounts of GHGe. Vegan's GHGe were 41.7% lower than non-vegetarians, lacto-ovo vegetarians were 27.8% lower, pesco-vegetarians were 23.8% lower and semi-vegetarians were just under 20% lower. Combining both vegan and lacto-ovo-vegetarian groups together resulted in a 30% reduction in GHGe compared to non-vegetarians.

Whereas the semi-vegetarian and pesco-vegetarian groups combined had a 22% reduction in GHGe compared to non-vegetarians.

This same study also examined health outcomes across these five dietary patterns. Vegans had the lowest mortality rate and non-vegetarians had the highest. While previously it's been assumed that health and environmental goals are similar, this is the first study to look at both GHGe and health outcomes in a real-life setting and confirms that healthier diets are also more environmentally friendly.