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Vegan versus Vegetarian: What's the Difference?

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Introduction

The Dietary Guidelines for Americans recommend consuming foods from all food groups, which traditionally includes foods from animal and plant sources. However, more and more research shows that following a healthy dietary pattern is the most important. There are several dietary patterns to choose from including the Mediterranean Diet or the DASH diet. Alternative diets, such as vegetarian or vegan diets, are becoming more popular. The reasons people choose to follow a vegetarian or vegan diet vary and may include animal welfare, religious, health, economic or environmental reasons. While both vegetarian and vegan diets involve not eating meat and/or dairy, some variations of the diets may choose to avoid additional food groups as well. Examples of different vegetarian diets can be found in Table 1.

What is a vegetarian diet?

A vegetarian does not eat meat, fish or poultry, which is referred to as a *lacto-ovo-vegetarian* diet (see table 1). However, there are many different types of vegetarian diets which are described in Table 1 [1].

What is a vegan diet?

A vegan diet, also referred to as a strict vegetarian diet, includes plant-based foods only and exclused meat, poultry, fish, eggs, dairy, honey and other foods of animal origin [1, 2].

Are vegetarian and vegan diets good for your health?

Nutrient Intake

People following vegetarian and vegan diets typically have adequate nutrition. Vegetarians have been found to consume fewer total calories, have lower levels of saturated fats and cholesterol, and have adequate or better intake of fiber and most vitamins (i.e. A, C, E, thiamine, and riboflavin) [3]. However, it has also been shown that vegetarians and vegans often have lower than normal levels of vitamin B12 (commonly found in meat, fish and dairy) and vitamin D (commonly found in fortified dairy), which may require vitamin supplementation. In addition, vegetarians and vegans are at risk for deficiencies in zinc, iron, essential amino acids and omega-3 fatty acids, usually found in seafood and meat; eating green leafy vegetables (high in iron), grains and legumes (high in iron and zinc) can lower this risk [3, 4, 6-7].

Vegetarian and vegan diets have been shown to have many health benefits. Compared to omnivores, vegetarians have been shown to have lower overall body weight, possibly as a result of lower calorie intake. They also have been shown to have lower cholesterol levels, reduced risk of cardiovascular disease

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Table 1. Types of Vegetarian Diets: What Can and Can't They Eat?

Vegetarian Diet Type	Can Eat	Cannot Eat
Lacto-ovo-vegetarian	plant-based foods, dairy and eggs	meat, poultry and fish
Lacto-vegetarian	plant-based foods, dairy	meat, poultry, eggs and fish
Ovo-vegetarian	plant-based foods and eggs	meat, poultry, dairy and fish
Pesco-vegetarian or Pescatarian	plant-based foods, dairy, eggs and fish	meat and poultry
Semi-vegetarian, Partial vegetarian, or Flexitarian	plant-based foods, dairy, eggs, some meat poultry and fish	[occasionally] meat, poultry, fish

and Type 2 diabetes [6-7]. Vegetarians also have a lower risk of heart disease-related death and premature mortality [3, 5]. Evidence on whether vegetarian diets reduce the risk of developing cancer remains inconclusive [6-7].

In a four-year study consisting of over 60,000 Seventh-day Adventist men and women, individuals who followed vegan and lacto-vegetarian (consuming dairy and/or eggs but no fish or meat) diets were associated with a reduced risk for Type 2 diabetes compared to the nonvegetarian diets [8]. This may be due to consuming less saturated fats, fewer foods that would cause insulin secretion or insulin resistance, or the lower body mass index (BMI) associated with vegetarians [8,9]. In addition, a study that looked at the dietary patterns of 50,000 Seventh-day Adventists over their lifetimes found that those who never followed a vegetarian diet and those who shifted from a vegetarian diet to a nonvegetarian diet were associated with being overweight [9].

Nutrient Intake

Protein is another nutrient that vegetarians and vegans need to pay close attention to when making food choices. While many non-meat foods contain protein, it is important to get the right types and amounts of protein.

Proteins are made up of essential and nonessential amino acids. In total, there are 20 amino acids - nine are essential and eleven are nonessential. Unlike nonessential amino acids, the body cannot make essential amino acids on its own. As a result, not all protein in food is the same. Foods can either be a complete protein or incomplete protein. Foods that are a complete protein contain all nine essential amino acids, while foods that are incomplete proteins are missing, or lack enough of one or more essential amino acids [10]. Examples of foods with complete and incomplete proteins can be found in Table 2.

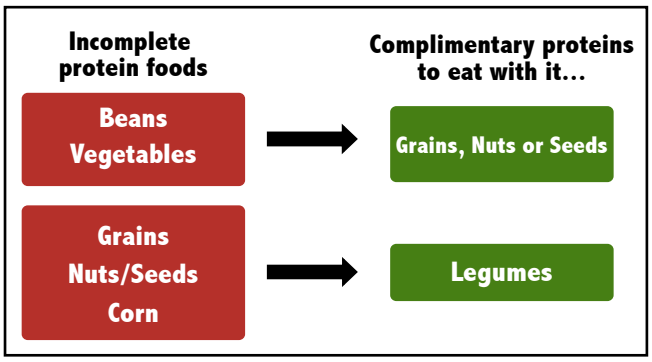
Vegetarian and vegan diets mostly consist of plant-based foods, which are often foods that are incomplete protein sources. Eating complimentary proteins is one way vegetarians and vegans can ensure they are getting all the essential amino acids from their diet.

Table 2. Examples of foods containing complete and incomplete sources of protein.

Complete Protein Foods	Incomplete Protein Foods
Cow's milk	Beans
Red meat	Peas
Poultry	Grains
Eggs	Nuts
Soy	Vegetables

Complimentary proteins are two or more incomplete protein foods that, when eaten together, act as a complete protein. Examples of complimentary proteins can be found in Figure 1.

Figure 1. Examples of complimentary protein food pairings. Adapted from *American Society of Nutrition 'Protein Complementation'* (2011)[11].



Still Craving Meat? There's a Non-Meat Alternative For That...!

Recently, there has been an increase in the number of people eating plant-based foods despite not being vegetarian or vegan. This has led to a surge in

non-meat food alternatives in the consumer market such as the ones shown in Figure 2. These non-meat food options look and taste like meat but do not come from animals. Instead, they use different substitutes and alternatives to achieve the same flavor as real meat.

Impossible™ Burger

The Impossible™ Burger is a non-meat based alternative made by Impossible™ Foods, Inc.. Its main component: heme. Heme is an iron-based molecule that is commonly found in animal meats and is responsible for much of the flavor. The scientists behind the product extract heme from the roots of soybean plants and then insert it into genetically engineered yeast. The yeast then ferments to produce more heme before being mixed with other ingredients such as soy and potato proteins, coconut and sunflower oils, and methylcellulose (an ingredient that holds it all together). The Impossible™ Burger contains 9g of carbohydrates, 14g of fat, and 19g of protein [12].

Beyond Meat

The Beyond Burger™ is non-meat, plant-based burger made by the company Beyond Meat. The Beyond Burger™ has a longer ingredient list than the Impossible™ Burger and has some key ingredient differences. It does not contain soy or gluten; instead it contains pea protein isolate and beet juice extract for beef-like coloring. The Beyond Burger™ contains 3g of carbohydrates, 18g of fat, and 20g of protein. The Beyond Meat company also offers plant-based sausages, beef, and beef crumbles [13].

Tofurky

The Tofurky company makes many non-meat food options including chicken, deli slices, sausages, hotdogs, grounds and roasts. The base of its products contain ingredients such as tofu and whole soybeans. Given the large selection of different non-meat products, the carbohydrate, fat and protein can vary [14].

Figure 2. From left to right: Impossible™ Burger; Beyond Meat Burger; Tofurky Beef Style Grounds.

Savory Vegetarian & Vegan Tacos

Ingredients:

Flour or corn tortillas	Bell peppers	Pepper
Sweet potatoes	Tomatoes	Olive Oil
Corn, fresh or canned	Avocado	Cilantro
Black beans	Salt	

Directions:

1. Dice tomatoes and avocado.
2. Peel sweet potatoes.
3. Cube bell peppers and sweet potatoes.
4. Season bell peppers and sweet potatoes with olive oil, salt and pepper.
5. Place sweet potatoes on cookie sheet and bake at 400° until soft (approx. 25-30 minutes).
6. Sautee bell peppers on stove top until peppers start to wilt.
7. Warm black beans and corn on stove top.
8. Once sweet potatoes are done cooking, warm tortillas in the oven for 2-3 minutes.
9. Remove tortillas from oven and top with sweet potatoes and bell peppers.
10. Top with drained black beans and corn (if canned), tomatoes and avocado.
11. Season with cilantro.

Optional addition for Vegetarian: Add shredded cheese and/or sour cream as desired.
Optional addition for Vegan: Add pan roasted chickpeas seasoned with paprika.

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