PLANT PROTEINS IN FOODS

HISTORY
Take a look behind the makings of food banks and the rise of plant proteins.

USES
What plant proteins are available in the market and how you can use them!

BENEFITS AND NUTRITION
Evaluate the nutritional effects of plant proteins
HISTORY
THE RISE OF PLANT BASED PROTEINS

Plant based protein products have become increasingly popular as consumers have been seeing an increase of options in stores and within various restaurants. This observation of plant based popularity can be supported by the 31% increase in sales seen in these products within the last two years (4). Research has shown that consumers in the UK have been looking into products that may diversify their diet and cut down on their meat intake. In order to be successful in the market, these innovative products must cater to the needs of the consumers. In order to attract the consumer these products should have palatable tastes and textures. This is especially necessary since it can drive the repurchase of a product. Other details that consumers tend to look at include whether the product has a clean label, the nutrients that may be included, the diversity of the ingredients used, and the sustainability of the ingredients included.

FOOD INSECURITY IN COLLEGE

FOOD INSECURITY
According to the Eastern Illinois Food bank, it "refers to USDA's measure of lack of access, at times, to enough food for an active, healthy life for all household members and limited or uncertain availability of nutritionally adequate foods." (1)

THE COLLEGE DIET
Food insecurity is more prevalent in college students than most might think. A study in 2019 found that of the students that participated ~19% were food insecure while another 23.5% were considered at risk (2).

SUPPORT FOR COLLEGE STUDENTS
While some colleges may not have programs, there are many resources within the local community. Common options include local food pantries, SNAP benefits, soup kitchens, church potlucks, and many other local organizations (3).
Soy products are among the richest sources of protein in a plant-based diet. Tofu and Tempeh are two products that are made from soy beans. Red or green lentils contain plenty of protein, fiber, and key nutrients, including iron and potassium. Similarly, chickpeas, peanuts and almonds are very rich in protein and are good sources of plant based proteins. Quinoa is a grain with a high-protein content. Quinoa can be added to pasta, stews, soups, or can be sprinkled over salad. Chia seeds are low-calorie foods that are rich in fiber, protein and heart-healthy Omega-3 fatty acids. A person following a vegan or vegetarian diet should eat a varied diet of plant-based foods to get the required range of amino acids. This includes high-protein foods, such as tofu, tempeh, lentils, nuts, seeds, and quinoa. (5)
USES

PASTA

Pasta is a versatile ingredient and is not time-consuming to prepare, thereby working well for college students.

GRANOLA BARS

Granola bars are a nutrient dense snack that works well with the packed schedule of a college student.

Granola bars not only function as convenient sources of protein, but also provide multiple vitamins and minerals.

WHOLE GRAIN CEREAL

Wheat, oat and corn based breakfast cereals are great sources of protein, especially when paired with legumes and/or nuts!

PEANUT BUTTER

A serving of peanut butter has 8 grams of protein, and when made into a PB&J sandwich can account for 1/5th of daily protein requirements met!

ROLLED OATS

1/2 cup of rolled oats can provide 5 grams of protein, and can easily be combined with peanut butter in oatmeal or breakfast cookies to make up for 1/5th of the daily protein intake!

CANNED BEANS

Canned beans are an incredibly versatile ingredient that can be incorporated into salads, burgers, tacos and more!

There is increasing evidence that beans can reduce the risk of many diseases, such as diabetes, heart disease and more.
EASY TACOS

Ingredients:
- 1/2 cup onions
- 1/2 cups beans
- 1/2 potato, cubed
- 3 tsp garlic powder
- 1/4 cup corn
- 1-2 tsp lime juice
- Taco shells
- 1 tsp cayenne powder (optional)

Instructions:
1. Sauté chopped onions with 2 tsp garlic powder and cayenne powder (optional)
2. Add 1 tsp garlic powder to potatoes and roast potatoes at 350 F for 20-30 minutes
3. Add in black beans and corn and cook until corn appears roasted
4. Squeeze some lime juice and add to a taco!

OVERNIGHT OATS

Ingredients:
- 1 cup oats
- 2 cups milk of choice
- 2 tbsp peanut butter
- 1 cup cut fruits of choice (optional)
- Cinnamon (optional)
- Nuts (optional)

Instructions:
1. Mix a cup of rolled oats with 2 cups milk of your choice and 2 tablespoons of peanut butter.
2. Leave the mixture in the fridge overnight.
3. Add any fruit of choice (optional) and enjoy!
"CLEAN UP THE FRIDGE" PASTA

Ingredients:
- 1 cup pasta (of choice)
- 2 roma tomatoes (substitute 1/2 cup canned crushed tomatoes)
- Red pepper flakes
- Black pepper
- Garlic powder
- Onion powder
- 1 cup chopped vegetables of choice

Instructions:
1. Cut tomatoes in half and add 1 tsp pepper and a pinch of salt.
2. Roast at 400 F for 30-40 minutes. The peel should come off easily.
3. Meanwhile, cook pasta and add garlic and onion powder to taste to the vegetables.
4. Roast vegetables at 350 F for 20-30 minutes
5. Crush the tomatoes and add seasonings of choice
6. Mix it all up and enjoy!

HUMMUS

Ingredients:
- 1 can cooked chickpeas
- 2 tbsp tahini
- 3 cloves garlic, minced
- 1-2 tsp lemon juice
- Salt
- Pepper
- 1 tsp cayenne powder (optional)

Instructions:
1. Drain the liquid from the canned chickpeas and rinse the chickpeas thoroughly.
2. Blend all ingredients together.
3. Add salt and pepper to taste.
HEALTH BENEFITS AND NUTRITIONAL OVERVIEW OF PLANT BASED PROTEINS

Research has shown that consuming more of these plant-based proteins may lead to a lower risk of cardiovascular disease due to better cholesterol regulation (6). Replacing animal proteins with plant protein also has the potential to lower blood pressure (7). In addition, consuming these types of food may help to lower the amount of fat present in the blood (7).

In comparison to animal-based proteins, plant-based proteins are not considered to be "complete proteins". This means that they do not contain all essential amino acids, which are the precursors for making protein in our bodies (6). Plant-based proteins contain only 62-81% of the essential amino acids that are found in animal products such as eggs (6). To make up for this, it is important to consume protein from a variety of different plant sources in order to meet the essential amino acid requirement in one's diet. For example, consuming beans and rice will provide all essential amino acids. Individuals who do not consume the appropriate balance of amino acids may suffer from issues such as brittle hair and nails, fatigue, and frequent illness (8).

Overall, plant-based proteins can be an excellent addition to one's diet. These types of food may have a number of health benefits. Still, it is important to remember that eating a good balance of these proteins is necessary to maintain good health.
WHICH PLANT PROTEIN? WHERE ARE THEY USED?

TRAPPING THE COLOR, FLAVOR AND AROMA

This technique (microencapsulation) is used to disperse aromas, flavors, and colors and make food products stable. Vegetable proteins such as soy proteins, pea proteins, wheat proteins, rice proteins, oat proteins and sunflower proteins are used for this (10).

EDIBLE FILMS AND COATINGS

Films and coatings made from various agricultural proteins are renewable replacements for petroleum-based polymeric materials and plastics. Soy, corn zein, and wheat gluten are used to make edible films, coatings, and packaging materials (10).

THICKENER

Plant proteins are also used as thickener of in the food industry. Best example would be chia seeds. Chia seeds gel up just like gelatin so they can be used anywhere gelatin is used. It is a vegan alternative of gelatin. For example, in smoothies and milkshakes (10).

SCIENCE OF HOW PLANT PROTEINS WORK IN THE FOODS

The functional properties of plant proteins depend on the physical and chemical properties of the proteins and how they interact with other molecules during isolation, processing, storage, and other activities. Some functions of plant proteins in the food products are solubility (help in dissolving ingredients into a liquid phase), microencapsulation or trapping components into small capsules so that they blend with the food, gelation (gel formation), foaming, and viscosity. Plant proteins come from different sources and hence have different structures. Their function varies according to the structures. (10)
References


