

For plant-based proteins, soy is a smart choice

May 18 2022, by Elaina Hancock



Credit: Pixabay/CC0 Public Domain

Soy—the versatile protein source that comes from the species of legumes known as soybeans—is becoming a popular alternative to meat and dairy products, and for good reason. Whether you are trying to eat

healthier, eat more sustainably, or both, College of Agriculture, Health and Natural Resources Department of Nutritional Sciences researcher Yangchao Luo and his research group recently published an article in the *Journal of Agriculture and Food Research* exploring qualities that make soy a versatile and nutritious choice.

What makes soy such a popular source of plant-based meat (and dairy) alternatives?

In comparison to other plant-based proteins, soy protein provides the most complete nutrients in terms of [amino acids](#), compared to animal sources. Soy contains almost every amino acid, with only one minor exception, methionine, which is an [essential amino acid](#), and what we call a limiting amino acid. Other plant-based proteins may miss two, three, or even four different essential amino acids. You can easily get all essential amino acids in a meal by mixing plant-based proteins or by pairing soy-based proteins with grains.

Upon extrusion process, soy-based proteins undergo a series of physicochemical changes to form fibrous anisotropic structure, the texture of which becomes very similar to [meat products](#). When modified chemically or enzymatically, soy protein can further develop sensory characteristics that can mimic real [meat](#). This is very easy to do for [soy protein](#), but more challenging for many other plant proteins. A lot of food companies nowadays are trying to develop meat alternatives, and soy-based protein is just the top choice for the food industries.

The environmental impacts of the meat and dairy industries are often cited as one reason to switch to plant-based alternatives or to limit meat and dairy intake. Can you talk about how plant-based products

have fewer negative environmental impacts?

A major concern today is carbon emissions. Livestock agriculture generates a lot of CO₂ and many other non-CO₂ greenhouse gases over the entire process from land use, transportation, enteric fermentation, [meat processing](#), etc. and produces a lot of waste but growing crops is different. Crops not only emit much less greenhouse gases but also help removing CO₂, decreasing the global warming potential.

In our lab, one of our most recent research projects is to develop urban agriculture methods so we can grow plants that can serve the local community. Urban agriculture is also known as controlled environment agriculture, and indoor vertical farming is one of the important approaches. Soybeans are one of the crops that can be grown this way and we can supply enough produce locally instead of getting resources from far away.

Can you talk about the health benefits of diets that incorporate more soy-based products?

For [animal products](#), the major concern is fat, and most of the fat in the animal meat products are saturated or trans-fat, which can increase the risk of chronic illnesses like heart disease, high cholesterol, and high blood pressure. That's not the case with plant-based products. Other health benefits include reduction in different types of cancers, such as [breast cancer](#), prostate cancer, and gastric cancers over the long term of consumption of soy-based products like tofu and soymilk.

A major contribution from plant-based proteins is not protein per se, but plants contain a lot of dietary fiber, phytochemicals, micronutrients, and different minerals and vitamins that are lacking in the animal-based products. Phytochemicals are very highly potent antioxidants that

scavenge free radicals in the cells, and this is very helpful for fighting many cancers.

What kinds of processing do soy food products undergo? Does this processing impact the nutritional value of the product?

It depends. One method of processing for soy products is fermentation, to make things like soy sauce and teriyaki sauce. Fermentation processes enhance flavor and [shelf life](#), and usually the fermentation process adds a lot of probiotics, in this case, processing can enhance the nutritional value.

Heating or autoclaving are also used to process some soy products, but heat destroys some of the proteins, amino acids, and other nutrients.

Soy milk is another popular soy product. The beans are crushed and filtered to make the milk. Calcium in soy proteins and soy-based products is in very high amounts. In terms of micronutrients, one of the phytochemicals which is a very strong antioxidant is isoflavone and when combined calcium they help each other for absorption, digestion, and metabolism. In this aspect, you can have higher [health benefits](#) than with animal products that do not contain these phytochemicals.

More information: Pingxu Qin et al, A review on plant-based proteins from soybean: Health benefits and soy product development, *Journal of Agriculture and Food Research* (2022). [DOI: 10.1016/j.jafr.2021.100265](https://doi.org/10.1016/j.jafr.2021.100265)

Provided by University of Connecticut

Citation: For plant-based proteins, soy is a smart choice (2022, May 18) retrieved 27 April 2024 from <https://phys.org/news/2022-05-plant-based-proteins-soy-smart-choice.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.