

Lee Nunn
Community Internship Summer 2022
Central Texas Food Bank

Senior Nutrition Handout for Commodity Supplemental Food Program (CSFP)

Topic: Protein consumption in older adults

Are you getting enough protein? Animal sources of protein like eggs, meat, chicken, pork and fish are considered the most bioavailable sources, meaning they are the most readily absorbed by the body. However, if you are cutting back on animal proteins or prefer not to eat animal-based proteins at all then you will need plant-based sources for your protein needs. Consider the underappreciated lentil. There is an endless color spectrum of lentils including the most widely eaten type, brown which has an earthy flavor, green that has a peppery flavor, yellow and red that are usually split, cook quickly and have a sweet nutty flavor, and Beluga, which is black and named after the caviar. Eaten hot or cold, lentils can act as a side dish, a main dish and a meat substitute due their high protein content.

So why is protein so important, especially in older adults? Protein is used in many different processes in your body. Your muscles, skeletal, smooth and cardiac, are made of protein that contract and provide force to carry out their activity. Your immune system uses proteins to identify pathogens like bacteria and viruses that can cause disease. Your skin, bones and joints all contain collagen, a structural protein that is very tough and resilient. Every cell in your body uses protein to maintain its shape and many proteins can act as enzymes, speeding up reactions that are required for a cell and the organism to function. In fact, there isn't too much we can do without protein. It's essential.

What are proteins? Proteins are strings of amino acids, the building blocks of proteins, linked together in a particular way so that they have a specific function. For example, actin and myosin are responsible for the contraction of muscle tissues and their structures resemble ropes. When contracting they slide past each other changing the muscle's length. Collagen, the protein found in bones, joints and skin is a triple helix. Imagine three ropes winding around each other to make a thicker and stronger rope. Enzymes are designed to have particular shapes so they can facilitate reactions in a very specific way. A simple way to think about this is like a key fitting only one particular lock. And the immune system relies on antibodies, a type of protein, to attach to and neutralize pathogens. But whatever the protein is and whatever source it is from, animal or plant, when it's ingested it has to be broken down into smaller fragments and absorbed by our digestive system.

Why is it especially important for older adults to eat adequate amounts of protein? Eating an adequate amount of protein at any age is important, but as we get older our digestive system becomes less efficient at absorbing nutrients and this includes protein. Thinking about the whole process, when we consume a food the first thing that happens is a mechanical event, the food has to be chewed. At the same time during the chewing process, enzymes are released in the saliva which begin to break down the food. The chewing increases the surface area which allows the enzymes to work more effectively. As we get older chewing can become more problematic due to dentition and muscle strength and the food is not broken down as well because the amount of saliva is typically less which means less enzymes are present. Once the food is swallowed it enters the stomach. It is of particular importance that the stomach be able to produce stomach acid as this is critical for protein digestion. An enzyme released in the stomach which begins to cut the protein into smaller fragments is dependent upon stomach acid for

its function. Older adults typically produce less stomach acid and so are less able to degrade the protein into smaller pieces in the stomach. Lastly, the fragmented protein moves into the small intestine where it gets broken down even further into 2 and 3 amino acid lengths called peptides. At this stage, the peptides can now be transported across the intestinal membrane and are considered absorbed. At each step outlined, inefficiency begins to affect the amount of protein absorbed so it's very important to consume adequate amounts throughout the day to offset this inefficiency.

How can you make sure you ingest adequate amounts of protein?

1. Eating small amounts of protein throughout the day is a good strategy for maximizing protein intake. Eating large amounts of protein in one sitting may overwhelm the digestive system and lead to less absorption even though an adequate amount of protein was consumed.
2. Use foods that have high protein content, whether they be animal or plant, at every meal and snack. Here is where adding a lentil salad as a side dish, or maybe having some lentil soup for a snack can increase your protein intake and lead to you feeling satiated without feeling bloated.
3. Decrease your consumption of refined carbohydrates like white rice, pasta and bread to allow for a higher intake protein foods. There is only so much you want to eat in a day and protein is the most critical macronutrient for older adults to maintain their muscle mass, bone and skin integrity and immune system.

For further information about high protein foods and recipes visit centraltexasfoodbank.org/recipes

Landi F, Calvani R, Tosato M, et al. Protein Intake and Muscle Health in Old Age: From Biological Plausibility to Clinical Evidence. *Nutrients*. 2016;8(5):295. Published 2016 May 14. doi:10.3390/nu8050295

Alam I, Almajwal AM, Alam W, et al. The immune-nutrition interplay in aging – facts and controversies. *Nutrition and Healthy Aging*. <https://content.iospress.com/articles/nutrition-and-healthy-aging/nha170034>. Published January 1, 2019. Accessed June 12, 2022.

Cao C, Xiao Z, Wu Y, Ge C. Diet and Skin Aging-From the Perspective of Food Nutrition. *Nutrients*. 2020;12(3):870. Published 2020 Mar 24. doi:10.3390/nu12030870