

# [Nutritional benefits of beans](https://assignbuster.com/nutritional-benefits-of-beans/)

Beans are a great source of nutrients, beans are sometimes known as legumes. In a normal persons diet beans are one of the most important part because of their nutritional value. The most important nutrient in the bean is protein, which is made in the plant thanks to a bacteria called rhizobium. This bacterium places its self in the roots of the plant to change the nitrogen in to a form that is able to be converted in to amino acids. This is the beginning of protein in the bean.

Nutrients are very important to the human diet. They are what keep you healthy and able to grow and learn. The most common nutrients in beans are iron, folic acid, and protein. These are all helpful to your body. Iron helps to carry oxygen in your blood; it also improves energy levels and your immune system to stay strong. Folic acids are especially important to women, because it is able to prevent spinal problems and birth defects during the first few weeks of pregnancy. It is also been proven to lower the risk of heart problems when you are older and finally protein which is needed for growth and repair of your body and its tissues.

Most beans, with the exception of soybeans and peanuts, are made up primarily of protein and starch. The nutrients are stored inside the bean seed in a part of the bean called the cotyledon, as shown in Figure 1. The two cotyledons are completely surrounded by a tough seed coat, except for the point at which the bean has a little dimple. That is where there is a break in the seed coat and you’ll find a little hole or pore called the hilum. The hilum is where the bean seed was attached to the living plant before it was picked and dried. Initially, when placed in water, the dried bean seeds can only absorb water through their hilums. After about 30-60 minutes, though, the seed coats expand and become hydrated. At that point, water can move into the bean through the hilum and the entire seed coat surface (sciencebuddies. org).

Unfortunately most people experience discomfort after eating portions of beans. This is because they are full of complex sugar and fiber. The discomfort is felt because your body is forced to work extra hard to degust the sugar. Thankfully one is able to teach your body to deal with those things by just consuming vary small portions of the beans often.

The cooking of the bean is very important. Cooking dried beans in liquid is completely necessary to loosen the shell of the bean and to drake down the starchy granules that are built up inside the bean when it is dried. The amount of water used is also very important. If you use to much the bean will absorb it and produce a weaker flavor. But if not enough water is used the bean will remain hard and will make foe a bad cooking experience. Also important is the ways they are cooked do not hard boil them. The movement of the water will damage the seed coat causing the bean to break apart. A gentle simmer is best. At a temperature of 180 to 200 degrees farenheight the bean should be perfectly cooked and gently treated.

During my experiment I will be testing liquids containing acids, sugars, and calcium. These will slow the process of softening. I am looking for which of the slowing additives is fastest. Even thought fast softening is not always desirable. Expectedly the acid will work in the cell walls. It will make hemicelluloses which will soften the walls and make it less likely to dissolve. The sugar will work by causing the cell walls to harden and by slowing swelling of the starches in the cotyledons. And finally calcium will again work in the walls of the cell, but it will cause strengthening by cross-linking the pectin.

One way the softening process can be sped up is by adding baking soda. This, in the water, causes the water to become alkaline. Using just very small amounts of the baking soda can cut down baking time by 75%. The baking soda works by pushing out the magnesium which is caused by the pectin. It also works by dissolving the hemicelluloses in the water. This process is not desirable because the soda will leave the finished product slippery and with a soapy feeling and taste.

Cooking beans is usually fairly easy. The time needed to cook really depends on what kind of bean you are using and how you cook them. A few types of beans are completely safe to eat raw such as peas and bean sprouts. Most kinds of beans are best roasted or steamed. For this experiment dried mature beans will be necessary because of the amount of time needed to cook and the need for liquids to soften them. The kind of dried beans that will be used are lima beans.

The lima beans will be soaked overnight in cold water. One group will be the control group, having just beans and water. The second will just have table salt added to it. The third and fourth groups will have lemon juice and lemon juice with chopped tomatoes. The fifth group will have just milk, and finally, the sixth group will have molasses added.

The materials are an extremely important part of an experiment. Lima beans will be soaked and then dried. To prepare the beans, one bag will be opened and poured into an airtight container. Just enough water will be added to cover the top of the beans. Once it is full, a lid will be placed on the container and then set on the kitchen counter overnight, which is approximately ten hours. Then the prepared beans will be divided into six groups and the different items will be added.