SPROUTED GRAINS, NUTS & SEEDS

Credit for discovering the value of sprouted seeds traditionally goes to the Chinese, who learned to germinate legumes many centuries ago. They carried mung beans on their ocean-going ships, sprouted them throughout their voyages and consumed them in sufficient quantities to prevent scurvy. The Chinese instinctively knew that an important factor missing in nongerminated seeds was produced during the sprouting process—that substance is vitamin C.

But it is a mistake to think that the value of sprouted grain was unknown in the West. For centuries, beers of all sorts have been made with germinated grains. Certain old French cookbooks recommend sprouting dried peas before using them in soups. Bulgur, used extensively in Middle Eastern cooking, is made from coarsely ground sprouted wheat. According to enzyme specialist Dr. Edward Howell, in the past we ate most of our grains in partially germinated form. Grain standing in sheaves and stacks in open fields often began to sprout before it was brought into storage. Modern farming techniques prevent grains from germinating before they reach our tables.

The process of germination not only produces vitamin C but also changes the composition of grain and seeds in numerous beneficial ways. Sprouting increases vitamin B content, especially B_2, B_5 and B_6. Carotene increases dramatically—sometimes eightfold. Even more important, sprouting neutralizes phytic acid, a substance present in the bran of all grains that inhibits absorption of calcium, magnesium, iron, copper and zinc; sprouting also neutralizes enzyme inhibitors present in all seeds. These inhibitors can neutralize our own precious enzymes in the digestive tract. Complex sugars responsible for intestinal gas are broken down during sprouting, and a portion of the starch in grain is transformed into sugar. Sprouting inactivates aflatoxins, potent carcinogens found in grains. Finally, numerous enzymes that help digestion are produced during the germination process.

Sprouted grains should be a regular feature of the diet, and they can be used in numerous ways—in salads, sandwiches, vegetable dishes, as breakfast cereals

and as additions to breads and baked goods. However, we must warn against overconsumption of *raw* sprouted grains as raw sprouts contain irritating substances that keep animals from eating the tender shoots. These substances are neutralized in cooking. Sprouted grains should usually be eaten lightly steamed or added to soups and casseroles.

No special equipment is required to transform grains and seeds into sprouts—just wide-mouth, quart-sized mason jars with a round of window screen material cut to fit into the lid of the jar, replacing the solid insert. For seeds that sprout easily, see Sources.

The method for sprouting all grains and seeds is the same—only the length of time needed to accomplish full germination varies, depending on the size and nature of the seed. Simply fill a mason jar one-third full with any grain or seed. Add filtered water to the top of the jar and screw on the top with its screen insert. Allow the seeds to soak overnight, for one night only, and pour off the water. Rinse the seeds well—you can do this without removing the top. Invert the jar and let it sit at an angle so it can drain, and to allow air to circulate. The seeds should be rinsed every few hours, or at least twice a day. In one to four days the sprouts will be ready. Rinse well, shake out excess moisture, and replace the screen insert with the solid section of the lid. Store the sprouts in the refrigerator.

Almost any grain or seed can be sprouted—wheat, barley, dried beans, radish seeds, onion seeds, chia seeds, chick peas and almonds. Fragile seeds such as pumpkin and sunflower also sprout nicely. Hulled seeds should be purchased in tightly sealed packages and not from open bins, so that oxidation is minimized.

Seeds that are difficult to sprout include flax seeds, which become too mucilaginous to rinse properly, and oat seeds, which will not sprout once they have been separated from their outer hulls. Seeds that have been irradiated, such as those sold as spices, will not sprout.

Nuts like pecans and walnuts that have been removed from their shells cannot be sprouted, but an overnight soaking in warm, salted, filtered water will neutralize enzyme inhibitors. (See Snacks, page 512.) Skinless almonds and peanuts will often sprout, an indication that their skins have been removed by mechanical means and not by a process involving boiling or roasting

There is only one seed we do *not* recommend in sprouted form (or in any form) and that is—surprisingly—alfalfa! After mung beans, alfalfa is the variety of sprout that has caught on in the health food world. Unfortunately, it seems that all the praise heaped on the alfalfa sprout was ill advised. Tests have shown that alfalfa sprouts inhibit the immune system and can contribute to inflammatory arthritis and lupus. Alfalfa seeds contain an amino acid called canavanine that can be toxic to man and animals when taken in quantity. (Canavanine is not found in mature alfalfa plants; it is apparently metabolized during growth.)

Germination increases the enzyme activity as much as six times. This is due to proteolytic release of the enzymes by inactivation of the enzyme inhibitors found in all seeds. Soaking the seeds allows proteases within to neutralize the inhibitor and release the enzymes from bondage. During the years 1930 to 1940 chemists spoke of free and bound enzymes in seeds. It was found that such enzymes as protease and papaine soaked in water with the seeds, released the "sleeping" enzymes from bondage. In 1944 when enzyme inhibitors were discovered in seeds the mystery was cleared up. Edward Howell, MD *Food Enzymes for Health and Longevity*

Any seed can be made to germinate [unless it has been irradiated] by increasing its moisture and holding it at the proper temperature. Resting seeds contain starch, which is a storage product and a source of future energy when conditions become ideal for the seed to germinate and grow into a plant. In nature, seeds sometimes must rest or hibernate for months or years before conditions become satisfactory for them to grow. Enzymes are present in the resting seed but are prevented from being active by the presence of enzyme inhibitors. Germination neutralizes the inhibitors and releases the enzymes. Enzyme inhibitors are part of the seed machinery and serve a purpose. But these inhibitors are out of place in our bodies. They could stop our own enzymes from working. Edward Howell, MD *Food Enzymes for Health and Longevity*

GRAINS (WHEAT, RYE, BARLEY)

Rinse 2 to 3 times per day. Sprouts are tiny and white. They will be ready in 3 to 4 days, reaching a maximum length of 1/4 inch. Use to make bulgur (page 460) and whole grain casseroles, or add to bread.

BUCKWHEAT

Begin with whole buckwheat seeds that have *not* been toasted. Rinse 2 to 3 times per day. Tiny sprouts are ready in 2 days. Use to make kasha (page 464).

BEANS (MUNG AND ADZUKI)

Fill jar only 1/4 full. Rinse 4 or more times per day. Sprouts will be ready in about 4 days. Mung bean sprouts are ready when 2 inches long; the adzuki bean sprout is ready at 1 inch.

BEANS (KIDNEY, LIMA, BLACK)

Rinse 3 to 4 times per day. Sprouts are ready in about 3 days, when sprout is 1/4-inch long. Beans should then be cooked. Sprouted beans will cook in much less time than beans that have been merely soaked.