Food processing and nutrition

Almost all food is processed in some way before it is eaten. Commercially, the main reasons to process food are to eliminate micro-organisms (which may cause disease) and to extend shelf life.

Simply cooking or combining a food with other foodstuffs to create a recipe is also considered a form of food processing. Whatever the case, the nutrient value of any food is often altered by the processing.

Stability of nutrients during processing and storage

Some vitamins are more stable (less affected by processing) than others.

Water soluble vitamins (B-group and C) are more unstable than fat soluble vitamins (K, A, D and E) during food processing and storage. The most unstable vitamins include:

- Folate
- Thiamin
- Vitamin C.

More stable vitamins include:

- Niacin (vitamin B3)
- Vitamin K
- Vitamin D
- Biotin (vitamin B7)
- Pantothenic acid (vitamin B5).

Many things can affect a food’s nutrient content

There are a variety of things that happen during the growing, harvesting, storing and preparing of food that can affect its nutritional content.

Fertilisers

Most plant crops are produced with the aid of fertilised soils. Fertiliser tends to reduce the vitamin C content of the crop, while increasing its protein value. It doesn’t seem to make any difference to the plant’s nutrient value whether the fertiliser is organic or not.

Milling

Cereals, such as wheat, are ground to remove the fibrous husks. The husks contain most of the plant’s dietary fibre, B-group vitamins, phytochemicals and some minerals.

That’s why products such as white bread are less nutritious than wholemeal varieties, even if they have been artificially fortified with some of the nutrients that were lost after milling. It is impossible to add back everything that is taken out, especially the phytochemicals. The ‘fibre’ that is added back to some products is often in the form of resistant starch, which may not be as beneficial as the fibre removed.

Blanching
Before a food is canned or frozen, it is usually heated very quickly with steam or water. The water soluble vitamins, including vitamin C and B-complex, are sensitive and easily destroyed by blanching.

**Canning**

Food is heated inside the can to kill any dangerous micro-organisms and extend the food’s shelf life. Some types of micro-organisms require severe heat treatment and this may affect the taste and texture of the food, making it less appealing. Preservatives are generally not needed or used in canned foods. Water soluble vitamins are particularly sensitive to high temperatures. Many people believe that canned foods are not as nutritious as their fresh counterparts; however, this is not always the case, as fresh food often deteriorates more rapidly than canned foods.

**Freezing**

The nutrient value of a food is retained when it is frozen. Any nutrient losses are due to the processing prior to freezing and the cooking once the frozen food is thawed.

**Pasteurisation**

This is the heating of milk to destroy micro-organisms. The nutrient value of milk is generally unaffected. In the case of pasteurised fruit juices, some losses of vitamin C can occur.

**Dehydrating**

Drying out foods, such as fruits, can reduce the amount of vitamin C they retain but it can also concentrate other nutrients, particularly fibre in plant foods. Dehydrating food also makes food products more energy dense, which may contribute to weight gain. If a dehydrated food is reconstituted and cooked with water, further nutrients are leached out of the food and lost in the cooking water.

**Preparation of vegetables**

Most vegetables are peeled or trimmed before cooking to remove the tough skin or outer leaves. However, the bulk of nutrients, such as vitamins, tend to lie close to the skin surface of most vegetables. Overzealous trimming can mean a huge reduction in a vegetable’s nutrient value.

**Losing nutrients through cooking**

Some vitamins dissolve in water, so you lose your vitamins to the cooking water if you prefer to boil your vegetables. Alternative cooking methods – such as grilling, roasting, steaming, stir-frying or microwaving generally preserve a greater amount of vitamins and other nutrients.

**The benefits of cooking food**

It would be inaccurate to say that cooking food always lessens the nutrient value. Cooking can be advantageous in many ways, including:

- Making the food tastier.
- Breaking down parts of vegetables that would otherwise be indigestible.
- Destroying bacteria or other harmful micro-organisms.
- Making phytochemicals more available; for instance, phytochemicals are more available in cooked tomatoes than in raw tomatoes.

**Preserving the nutrient value of vegetables**

Some suggestions to retain the maximum nutrition in the foods you cook include:

- Store foods properly, such as keeping cold foods cold and sealing some foods in airtight containers.
- Keep vegetables in the crisper section of the refrigerator.
- Try washing or scrubbing vegetables rather than peeling them.
• Use the outer leaves of vegetables like cabbage or lettuce unless they are wilted or unpalatable.
• Microwave, steam, roast or grill vegetables rather than boiling them.
• If you boil your vegetables, save the nutrient-laden water for soup stock.
• Use fresh ingredients whenever possible.
• Cook foods quickly.

**Where to get help**

• Dietitians Association of Australia Tel. 1800 812 942

**Things to remember**

• The nutrient value of food is almost always altered by the kind of processing it undergoes.
• The water soluble vitamins are the most vulnerable to processing and cooking.
• Careful cooking and storage will help retain the nutrients in your food.

**This page has been produced in consultation with, and approved by:**

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