



Right cooking methods

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>Healthy cooking practices are important for good health. Healthy cooking practices are important for good health.

Regional and socio-cultural practices influence cooking and dietary practicesGood pre-cooking practices help in retaining nutrients and reducing contaminants.Cooking makes food palatable, helps in easy digestion, and destroys harmful germs.Cooking at high temperatures can destroy nutrients and form harmful substances as well.Do not wash food grains and legumes repeatedly before cooking.Do not wash vegetables and fruits after cutting or peeling.Do not soak the cut vegetables in water.Do not cook in excess water and discard it after cooking. Use only enough water for cooking.Always cover cooked foods with lids.Prefer pressure/steam cooking instead of deep frying/roasting.Consume more sprouted or fermented foods.Do not use baking soda while cooking pulses and vegetables as it adds to the sodium content (just like salt) of foods.Avoid reheating and reuse of leftover heated oils.Prefer earthen cookware over others.

Why is pre-cooking process important?

Foods in their natural state contain different nutrients in varying amounts. In the course of food preparation, depending on the recipe, foods are subjected to various processes such as washing, cutting, grinding, fermentation, germination, and cooking. In Indian cuisine, fermentation (idli, dosa and dhokla) and germination (sprouting) are common practices. These methods improve the digestibility and bioavailability of micronutrients. In addition, sprouting also increases the content of certain vitamins.

Foods should be washed well, but not repeatedly, before cooking or consumption to remove contaminants like pesticide residues, parasites, and other extraneous material. Vegetables and fruits should be washed thoroughly with potable water before peeling or cutting. However, certain precautions need to be taken while washing and/or cutting, to minimize the loss of nutrients:

- Avoid repeated washing of food grains like rice and pulses as it will result in loss of certain minerals and vitamins.
- Cutting vegetables into small pieces exposes a greater surface area of the foodstuff to the atmosphere, resulting in loss of vitamins due to oxidation.
- Cut vegetables and fruits should be consumed as early as possible as their shelf-life and nutrient contents reduce drastically.
- Cut vegetables, leafy vegetables, and fruits should not be soaked in water as water-soluble minerals and vitamins tend to get lost.

Are there any household methods of processing to improve and help retain nutrients in food?

Soaking, popping, puffing, sprouting/germinating, malting and fermenting are some of the established household methods that improve the digestibility and bioavailability of nutrients from wholegrains and legumes. Sprouted whole grains and legumes contain all of the original bran, germ and endosperm. The nutrients present in sprouts are more bioavailable than those in whole grains and can meet the requirements of vitamins and minerals.

When sprouting grains for human consumption, the optimum growth of the sprout should be only as long as the grain kernel itself. If grown any longer, the sprout begins to use up the powerhouse of nutrients that were stored in the grain, and the nutrient content declines

Method for sprouting

The common procedure for sprouting grains and legumes at households is given below:

- Place the cleaned grains in a strainer, rinse well, and drain the water.
- Soak the grains in a bowl with excess water so that the grain is completely submerged overnight at room temperature or at least for 12 hours.
- Drain the water in a strainer. Rinse well and collect the grains.
- Place the grains in a moist cotton cloth or a double layer of clean muslin moist cloth in a jar and cover. Cloth should cover the grains loosely to allow air circulation.
- Keep it out of direct light and keep at room (warm) temperature. The grains should sprout in 1–3 days.
- Sprouts can be consumed without further processing or by adding some garnish.

Blanching or steaming, which is better?

Blanching involves putting vegetables in boiling water or steam for a short time and cooling them immediately in cold water to stop enzyme actions which could cause loss of flavor or color or texture. This process increases the shelf life of the vegetables, but the nutrients might be lost along with water. Hence, steaming the vegetables and cooling them immediately in the refrigerator is advisable instead of blanching. This way the vegetables are not soaked in water and therefore there is no loss of nutrients. Steaming is better than blanching of vegetables as the nutrient content is better retained.

What are the various cooking methods?

Cooking improves the digestibility of most foods. Foods get softened on cooking and become easily chewable. Proper methods of cooking make foods palatable by improving their appearance, taste, flavor, and texture, thereby enhancing acceptability. In addition, they help in destroying disease-causing organisms and eliminate natural inhibitors of digestion.

It is well known that cooking alters the nutritional value of foods as the chemical structure of the nutrient is damaged to a certain degree depending on the method of cooking adopted. However, cooking also makes many nutrients more available to the body. Further, cooking kills several microbes and decreases the chance of food contamination. Some cooking methods are discussed below.

- **Open and closed lid cooking:** In open lid cooking, food takes a longer time to get cooked and exposure to air accelerates nutrient loss. While in closed-lid cooking food gets cooked quickly and nutrients are better retained because of the shorter cooking time. Green vegetables and green leafy vegetables change color during closed lid cooking but minimize nutrient loss.
- **Boiling and pressure cooking:** Boiling or pressure cooking is the best way to improve the nutritional quality of pulses since anti-nutritional factors (enzyme inhibitors that do not allow nutrients to get digested) are destroyed during boiling and pressure cooking. Hence, these methods increase the digestibility and therefore protein availability. The concentration of phytic acid in cereals and legumes (which hinders the absorption of minerals) decreases to a great extent after boiling or pressure cooking making important minerals like iron, calcium, magnesium, and zinc absorbable on consumption. Boiling with just enough water, without having to drain the water, is the best method to retain folate in legumes. This method of cooking improves the palatability of pulses. However, pulses should not be overcooked or boiled for too long as this reduces the quality of proteins. Longer cooking causes a drop in the nutritive value of pulses as it results in the loss of lysine. Remember to add only the required amount of water during boiling. B complex vitamins and vitamin C may be lost if the cooking water after boiling is discarded. Prolonged boiling also results in the loss of vitamins. Mineral content is not dramatically altered with boiling.
- **Steaming:** In contrast to boiling, during the process of steaming, the food merely comes into contact with steam. Direct contact between vegetable tissue and water is thus avoided, which significantly minimizes the loss of water-soluble vitamins and phytochemical compounds through leaching. Steaming is the best cooking method to increase the level of both antioxidants and polyphenols (which have antioxidant activity) in vegetables and greens. Further, this process makes many nutrients like beta carotene, and lutein more readily available to the body.
- **Frying :** Due to the high temperatures in the frying process, changes occur in nutrients, such as proteins, vitamins, and antioxidants. Some water-soluble vitamins, such as vitamin C can be lost during water evaporation. Overall, there will be a moderate loss of vitamins, and antioxidants and a small loss of minerals. Extended exposure of oil to high temperatures and atmospheric air can generate highly oxidized, potentially toxic products. The main disadvantage of this method, if used often, is that it increases the consumption of fats and oils. High consumption of food rich in fat has been linked with an increased risk

of heart disease, stroke, and type 2 diabetes. These conditions include increased blood pressure, high blood sugar, excess body fat around the waist, and abnormal cholesterol or triglyceride levels. Repeated use of oils used for frying should be avoided. Further, already used oils should not be mixed with fresh oils and reused.

- **Shallow frying:** Shallow frying has higher nutrient loss. Compared to deep frying, there is a lot more exposure to ambient oxygen (due a high surface-to-volume ratio as the cooking fat or oil is present in a very thin layer in the cooking vessel). This causes fats and oils to degrade significantly when combined with high temperatures; the rate of Polymeric Triglycerides (PTG) generation is higher than in deep frying. However, shallow frying only lasts a short while and the frying medium is usually not recycled or reused.
- **Stir-frying :** The process of cooking cut pieces of vegetables or meat with a little oil on high heat while constantly stirring is called stir-frying. Cooking for a short time without water prevents the loss of B vitamins and the addition of fat improves the absorption of plant compounds, antioxidants, and fat-soluble vitamins. This method preserves nutrients when compared to cooking in liquid. The rapid cooking and high temperature seals in the nutrients but heat-labile (easily destroyed by heat) vitamins will still begin to degrade. Vitamin C may be lost during stir-frying. Cooking time affects vitamin C losses more than the cooking method. The longer the cooking time the greater the loss of vitamin C.
- **Microwave cooking :** There are minimal nutritional differences between foods prepared by conventional and microwave methods. As cooking time is very less microwave cooking is one of the least likely forms of cooking to damage nutrients. The microwave uses a small amount of water and steams food from the inside-out. This retains more vitamins and minerals than any other cooking method as no leaching of nutrients occurs. Further, as the cooking time in the microwave is shorter, it helps preserve vitamin C and other nutrients that break down when heated. The nutritional effects of microwaves on protein, lipid, vitamins, and minerals are minimal. It is preferable to use glass or microwave safe ceramic vessels and to avoid plastic vessels.
- **Roasting :** Roasting is generally an intense temperature treatment, where food is heated at temperatures in a 150–300° C range or higher in an oven. The use of the constant oven temperature of 150–160° C throughout the cooking period results in lower cooking loss when compared to a high starting temperature. Heat-labile vitamins are, of course, destroyed in large amounts. Minerals remain intact with roasting. Roasting has beneficial and detrimental effects on various components, and the reason for such an eclectic outcome can be accredited to the product treated and processing conditions employed.
- **Barbecue and grilling :** In the barbecue method of cooking, low indirect heat is used. In grilling, high direct heat is used for cooking. Charcoal and wood are commonly used in this method of cooking Polycyclic Aromatic Hydrocarbons (PAHs) are compounds that can be found in foods that have been grilled or barbecued, notably meats. The type of heat source used for barbecuing has a significant impact on PAH concentrations and the final PAH profile in the barbecued meat products. Continuous barbecuing with the same charcoal results in higher concentration of certain carcinogens. Grilling helps lower calorie intake and may even help with weight loss. While grilling does not remove all the fat from meats, it causes the excess fat to melt and drip off the racks. Other cooking methods allow the meat to cook in its own fat, which can be reabsorbed. Grilling also helps food keep more of its vitamins and minerals and seals in moisture without the added fats. Charring foods,

specifically meats, on the grill should be avoided by continuously turning them over. Grilled meat preserves more of the vitamins and minerals in the meat including vitamin A, vitamin D, zinc, magnesium and iron, riboflavin and thiamine (essential B vitamins that help your body process food into the fuel your body needs). The same goes for grilled vegetables, where vitamins and minerals are better kept by grilling rather than any other cooking method, especially those with low water content like broccoli and asparagus. Grilling with too much marinade is not good as this may mean consuming too much salt or sugar. A by-product of grilling meats is known as advanced glycation end products (AGEs), or glycotoxins. As food is grilled, the AGEs multiply and this when ingested, leads to increased levels of inflammation.

- **Slow cooking :** During slow cooking cell walls break down and there is a release of powerful antioxidants from vegetables like tomatoes, corn, spinach, etc. making them more available to the body. Boiling peanuts increases their antioxidant concentration up to four times more than that of raw and roasted peanuts. Further, cooking meat in a liquid at low heat can help reduce the number of cell-damaging compounds known as AGEs (advanced glycation end products) that are produced in the meat by 50 percent when compared to broiling or grilling.
- **Air frying** simulates deep frying without the excess use of oil. Air frying significantly decreases the amount of oil absorbed into foods compared to deep frying. Less oil generally leads to less calories, which can reduce the risk of weight gain and obesity. An air fryer may be particularly helpful when cooking starchy foods like potatoes. Air-frying fish may lower the amount of polyunsaturated fatty acids (heart-healthy omega-3 fats) in them, and potentially increase the number of inflammatory compounds. Adding herbs to fish may help reduce the fat oxidation that happens when fish is air-fried.

How to safely use cookware?

- **Earthen pots :** These are the safest cookware. When using earthen pots, very little oil is required. They are environment-friendly and keep the food's nutritional content intact. Heat can circulate through the food in earthen pots, preserving the nutrition.
- **Stainless steel cookware :** These are generally considered safe for cooking purposes if used properly. It is widely used in kitchens around the world due to its various benefits, including its durability, resistance to corrosion, and non-reactivity with foods. It doesn't leach or react with acidic or alkaline foods, which means it is unlikely to impart metallic flavors or harmful substances to cooked foods.
- **Metal cookware :** We use a variety of cookware which are made of different materials. Some of these materials like aluminum, iron, brass or copper can enter the food when we cook or store food in them. Storing acidic foods like pickles, chutneys, sambar, sauces in aluminum, iron, unlined brass or copper vessels will make foods unsafe.
- **Non-stick pans coated with Polytetraflouoroethylene (teflon)** are a risk if they are heated to temperatures greater than 170°C. This might happen if an empty pan is left on a burner for a long time. In this case, the coatings can give off irritating or poisonous fumes. The usage and cleaning instructions should be strictly followed for non-stick cookware, and they should be discarded when the coating is worn-out or damaged.
- **Granite stone cookware :** These cookware nowadays are substantially lighter than granite stone cookware from earlier generations. Granite stone cookware save time and energy.

Stone cookware from earlier generations. Granite stone cookware save time and energy. These cookware also retain heat well, even after the heat source is turned off. Unless the cookware contains teflon coating such as Perfluorooctanoic acid (PFOA), perfluorooctane sulfonate (PFOS) and polytetra-fluoroethylene (PTFE), it is regarded as safe. When using granite cookware, set the cookware's temperature to a maximum of medium-high, as the non-stick coating gets damaged at a high temperature. The non-stick coating will be protected at medium-high heat.

Source: ICMR - National Institute of Nutrition, Hyderabad - Dietary guidelines for Indians [↗](#)

Source <https://data.vikaspedia.in/short/lc?k=WR2qfbzbRRhQRtu1fpuRA>

