

# **DISADVANTAGES OF OVER COOKING**

\*DR.O.P.YADAVA, Dr.Jagmohan Singh, Dr.Arvind Prakash, Dr.Asfaq Khan  
\*CEO & CHIEF CARDIAC SURGEON  
NATIONAL HEART INSTITUTE  
NEW DELHI

Lately lot of attention has been diverted to the harmful effects of various methods of cooking. It was earlier felt that over cooking kills bacteria and makes the food sterile and safe for eating and therefore a lot of people had erred on the side of over cooking rather than under cooking. It certainly helps in killing bacteria but recent research has shown a lot of harmful effects of over cooking.

1. It has been shown that by over cooking or exposing food to high temperature for long periods of time, sugars get converted into Advanced Glycation End products (AGE's) which irritate the cells of the body and release certain triggers of inflammation like C Reactive Protein. These advanced glycation end products are associated with disorders commonly found in adults as they get older like hypertension (High Blood Pressure), diabetes, stroke, dementia, vision problems, skin changes, nervous system and skin disorders. AGE's are produced more with animal derived products, for example cheese, bacon and sausages on exposure to high temperature. If one adds water, specially the use of steaming, it delays this reaction leading to the production of AGE's and is therefore beneficial. Dry high temperature is the worst culprit in this matter.
2. It has been shown that exposure of starch rich food (such as fried potatoes, potato chips, some types of breakfast cereals & baked food) to high temperature leads to production of a substance called "Acrylamide" which is a cancer producing substance and has been associated with some forms of cancer. This fact has been borne out of research carried out in the University of Stockholm. Heating the amino acid

"Asparagine" with sugars at temperatures upwards of 120 degree centigrade causes production of Acrylamides. Frying baking, roasting and grilling for long periods are most likely to reach these temperatures and may be harmful. Even use of pasteurised food especially milk may be harmful.

3. Also certain vitamins, specially water soluble Vitamins B, C & E, are dramatically unstable and they get destroyed on exposure to high temperature.
4. Over cooking also reduces the carotene level of the food and therefore Vitamin A, which is very important for proper vision and for development of retina, gets depleted in the food.
5. Repeated exposure to high temperature, specially repeated frying of vegetables, Samosas and Pakoras in the same oil again and again, leads to production of a special form of fat called "Trans Fatty Acids", which are extremely dangerous as they deposit in the wall of the arteries leading to their clogging and blocking. Depending on the area or the organ of the body where these trans fatty acids lodge are the effects noticed. For example if trans fatty acids get deposited in the arteries of the heart, one can get heart attacks; if in the arteries of the brain, one gets stroke; in the eyes, it can lead to blindness; in the kidneys to kidney failure and in the legs to pain in the legs on walking (claudication) and some times even to gangrene ending ultimately with amputations. These trans fatty acids are actually the atherogenic i.e. cholesterol depositing form of fat and are very dangerous.
6. Besides that over cooking leads to vegetables losing their normal lustre so that they become dull and they also lose their delicate flavour and aroma of herbs which are very important for normal salivation and for digestion of food.

With so many disadvantages of over cooking food, it is therefore just appropriate to know what is the best cooking method for good health of the whole family. For a healthy heart, we must eat food prepared by such a cooking method that there is minimum loss of nutrients. There are various methods recommended for cooking:

- a. **Boiling:** The simplest method of cooking is boiling. It is the cooking of food in a rapidly boiling liquid at a temperature of 100°C. But the main disadvantages being loss of nutrients, colour and flavour.
- b. **Simmering:** When foods are cooked in a pan with a well fitting lid at a temperature just below the boiling point of the liquid in which they are immersed (water – 82°-99°C), the process is known as simmering. Advantage of this method is that loss of nutrients is less.
- c. **Steaming:** To retain the nutritive value of food, steaming is a very good method. Steaming is the process of cooking food in steam from a boiling liquid, usually water. There is less loss of nutrients as there is no leaching and cooking time is less. Colour and flavour of vegetables is retained in this method.
- d. **Pressure Cooking:** In pressure cooking, escaping steam is trapped and kept under pressure so that the temperature of the boiling water and steam can be raised above 100°C and reduce the cooking time. There is loss of flavour and colour.
- e. **Grilling:** Cooking is done under a source of radiant heat. There is less loss of nutrients and improved flavour of food, but one can do over cooking unless one is careful.
- f. **Roasting:** When food is cooked uncovered on heated metal or frying pan the method is known as roasting. There is loss of nutrients like amino acids when the food becomes brown.

- g. **Sautéing:** This method involves cooking in just enough of oil to cover the base of pan (greasing the pan). The heat is transferred to food mainly by conduction.

In general, Frying, Grilling & Microwave cooking for long periods lead to very high temperatures as compared to boiling & steaming. The ideal method of cooking, which is recommended, is a combination of steaming and sautéing.

The advantages which are seen by using these methods are:

- a. Nutritive value of food is maintained because there is no leaching and cooking time is less.
- b. Easily digestible and not much fat is added.
- c. Texture of food is better, light and fluffy.
- d. Flavour of sauted and steamed food is good
- e. It is ideal for those with poor digestion.