Foood prcessing techniques from human health perspectives

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There are many processing techniques with the aim of preparing and preserving food. Drying, fementation, preservation with salt, preservation with sugar,smoking are quite old. They are fallowed by canning and freezing Recently, we are investigating alternative methods such as impulsed electrical field, high hydrostatic pressure, ohmic heating, etc.

There are negative aspects as well as positive aspects of food processing methods. However, more negative aspects of these processes are being discussed. These are the loss of nutrients and the formation of harmful compounds.

(1)Loss of nutrients occurs especially during grinding of wheat and bleaching of rice. These processes lead to loss of nutrients especially dietary fiber, group B vitamins and minerals from wheats and paddies. This phenomenon is one of the main causes of nutrition defficiency in the world

(2) During heat treatment (pasteurization, sterilization, etc.), the loss of vitamins (especially vitamin C) and amino acids is occurring. This loss also applies to home cooking.

(3) Harmful compounds can be formed in foods subjected to excessive heat treatment.The main ones are hydroxymethylfurfural (HMF), acrylamide AA), polycyclicaromatic hydrocarbons (PAH).These compounds are considered as carsinogenic.

(4) In addition, soma harmfull compounds such as epoxy fatty acid (EFA) during frying and monochloro-propanediol (MCPD) and glycidol ester (GE) during refining of oils at very high temperature can be formed.

Studies on the level of these compounds in foods are still going on. On the other hand, process improvement and alternative process development studies are continuing to reduce the amount of these.

While the negative aspects of food processing are exaggerated, it seems that the positive aspects are overlooked. This can even lead to the idea that food procesing is not necessary.For this reason,the positive aspects of the food processes need to be reminded time to time:

(1)The shelf life of foods after the harvesting, milking, or slaughtering is very limited. Their shelf life can be extended with an appropriate method of preservation. This prevents food wastage and contributes to food security.

(2) The production of most plant foods is limited to a certain region and a certain season. The preservation method is used to ensure the availability of food every season and everywhere. So it helps to get a balanced diet.

(3) Foodborne poisoning is mostly caused by raw foods. The main cause is pathogenic bacteria. Many foods are suitable nutrient medium for the growth of molds and forming mycotoxins Pathogens can only be inactivated by heat treatment and mold growth can be prevented by an appropriate preservation method. Therefore, food processing is a very important tool in ensuring food safety.

(4) The use of pesticides, hormones, antibiotics, etc. in agricultural production is widespread.

The residues of these are also an important food safety issue. For this reason, it is necessary to control residues in the raw material with appropriate tests. It is not the case that these control tests are applied at home scale.

(5) Heat treatments applied to foods increase the digestibility and bioavailability of large molecules such as starch, protein, pigment, etc. Thus the nutritional value of foods is increased.
(6) In terms of consumption, the sensory qualities of food such as taste, smell, color and texture are also important. These factors primarily determine the consumer's choice of food. The own sensory characteristics of many foods is formed during the procesing. Tea and bagel are typical examples of this.

(7) Ready foods also provide ease of supply, storage, preparation and dosing in the kitchen, thus improve the quality of life