Food is Thy Medicine!

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Almost all of us yearn for long life. But living longer is not much fun if we are not healthy enough to enjoy it. Hippocrates of Kos (460-370 B.C.) remarked centuries ago that "Food is thy medicine and medicine thy food". Ayurveda also holds the same view. After paying heavily for the side-effects of potent synthetic medicines, the West has lately started heeding to Hippocrates' advice.

Chemical compounds isolated from plants are now known to possess a wide variety of beneficial properties. Many of them reduce blood pressure, ward off anxiety, improve memory and cure diseases of microbial origin. Results of laboratory studies show that phytochemicals present in fruits and vegetables may reduce the risk of cancer, on account of their antioxidant and anti-inflammatory effects. Specific phytochemicals like the fermentable dietary fibers are permitted limited health claims by U.S. Food and Drug Administration.

As the preventive and curative properties of herbs have become well known, there is a growing trend in the West to fortify food and beverages with phytonutrients. Supplementation of food was mentioned for the first time in the year 400 B.C. by the Persian physician Melanpus, who suggested adding iron filings to wine to improve the stamina of soldiers. Nevertheless, it was between the First and Second World Wars (1924-1944) that supplementation was established as a measure to prevent nutritional deficiencies in populations or to restore nutrients lost during the processing of foods. Fortified foods are also called functional foods, as such foods have curative function in addition to their inherent nutritional nature.

Traditionally, fortification of foods and beverages involved essential nutrients like vitamins, minerals and protein. However, as the preventive or curative value of phytonutrients has become evident from scientific research, these compounds are also being utilized in food fortification. The concept of food fortification using phytochemicals is now fully endorsed by food processing industries in the developed world.

One major class of phytonutrients popular in fortification is dietary fibers. They occur in plants as soluble and insoluble fibers. Soluble fiber attracts water and transforms into gel during digestion. This process creates a feeling of satiety in the subject and slows down craving for food.
Soluble fibers are also reported to reduce higher levels of blood lipids. Obviously these are related to weight control. β-glucan isolated from oats is a good example of a soluble fibre finding application in fortification of food and beverages. The polysaccharide inulin is added to bread, yogurts and beverages, on account of its prebiotic nature or ability to act as a nutrient for the beneficial bacteria in colon. Several other soluble fibers are used to enrich biscuits, bread, beverages and desserts.

Lycopene is a bright red carotenoid pigment found in tomatoes and other red fruits and vegetables, like red carrots, watermelons and papayas. As research has shown an inverse correlation between consumption of tomatoes and cancer risk, lycopene has been considered a potential agent for prevention of some types of cancers, particularly prostate cancer. Along with two other natural colourants-lutein and zeaxanthin from marigold flowers- lycopene is increasingly being used for enriching food and beverages. Lutein and zeaxanthin-enriched bread spreads have already become popular in the West, on account of their ability to improve eye health.

It is now established that cellular damage resulting from free radicals is the fundamental cause of diseases. Many phytonutrients are able to prevent the generation of free radicals. Important among them is the class of polyphenols. The largest and best studied polyphenols are the flavonoids, which include several thousand compounds, comprising the flavonols, flavones, catechins, flavanones, anthocyanidins, and isoflavonoids. They are believed to reduce the risk of cardiovascular disease, cancer or other diseases. Catechin, quercetin, ferulic acid, resveratrol and many others are being tried in the fortification of food and beverages.

In the coming decades food science and technology will advance further to deliver nutrients for appropriate fortification. Regardless of the nutrients or fortification system, consumers all over the world will benefit from the tiny molecules generated by the vegetable kingdom. Thus, fortification of food and beverages will continue to be an important tool, not only to treat or prevent specific nutritional deficiencies, but also to promote a general state of well being in diverse societies, and possibly to prevent certain diseases.

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