

How cooking helps to foster good physical and mental health

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Health as we know it starts at cellular level. Trillions of cells make up the human body. The food we eat supplies nutrients required for optimum physical and mental functioning. Illness of any kind is an outward manifestation of an inward disorder. Based on a person's biochemical constitution, it is important to know which nutrients are required to boost and nourish that particular system. Due to genetic predispositions and certain illnesses, some people are not as capable of digesting certain nutrients as effectively as others.

Unlike the hunger pangs that compel an individual to look for food at all cost, cellular nutrient deficiencies in the human body resulting from insufficient intake or malabsorption of nutrients, do not elicit clear warning signals such as “feed me or I die”. The absence of a clear alarm system that warns an individual against imminent micronutrient scarcity is the basis for cellular nutrient starvation, and consequently, various health complaints. The primary focus of Eating for Health is the provision of an optimal level of nutrients to prevent nutrient scarcity and foster physical and mental health. In light of the aforementioned, it is important to apply cooking techniques that do not lead to unnecessary nutrient loss.

Physical Health

Physical wellbeing is defined by Seaward (1) as “optimal functioning of all body systems” (e.g., cardiovascular, immune, musculoskeletal, endocrine, nervous, reproductive, digestive, pulmonary systems). An unhealthy constitution is characterized by an energy and biochemical imbalance, which can often be attributed to an unhealthy

lifestyle (unbalanced diet, sedentary occupation, lack of exercise and faulty posture). A disturbance of the energy homeostasis of the body can manifest itself via numerous symptoms such as apathy, sluggishness, skin problems, frequent tiredness, poor vision, stunted or slow bone growth and susceptibility to common infections.

What is cooking?

Cooking, as defined by the Encarta dictionary, is “the process or activity of preparing food for eating” (2). It encompasses boiling, poaching, baking, frying, roasting, toasting, grilling, braising, stewing and so on. Cooking processes can exterminate disease causing bacteria and increase palatability. If meat is cooked properly, the organisms that thrive on raw meat are killed. Though the process of food preparation can lead to a loss of nutrients, it can convert the composition of some nutritional products and make them more bio-available for absorption and easier digestion. For example, boiled eggs harden and proteins in meats and poultry become firmer.

Table 1. Nutrients needed for physical and mental health and their sources

Nutrient	Function	Sources
Vitamin A	Infection resistance	Mustard and dark leafy greens
Vitamin B1 (thiamine)	Heart, nerves and mental function	Oats, brown rice, soy milk, peppers, cabbage, sesame seeds, tuna
B3 (niacin)	Lower cardiovascular risks	Brown rice, broccoli, mushrooms, peanuts, beef liver, tuna, sunflower seeds
B5	Formation of antibodies	Oats, brown rice, yoghurt, watermelon, lemons, broccoli, peas, carrots, avocados, sweet potatoes, mushrooms, broad beans
B6	White blood cell function	Brown rice, tuna, avocado, peppers, soy beans
B12	Sound metabolism and bone marrow health	Turkey, salmon, tuna, shrimp, crab, clams, cottage cheese, low fat yoghurt, poached eggs and milk
Vitamin C	A water soluble antioxidant that can stimulate collagen formation	Red pepper, sprouts, cauliflower, celery, cabbage, watercress, oranges, papaya, cranberries, pineapple
Vitamin D	Resistance to infection and thyroid function	Fish oil
Vitamin E	A fat soluble antioxidant	Avocado, peanuts, spinach, and beet greens
Folic Acid	Immune system	Lettuce, beetroot, cabbage, avocados, shrimp, turkey, sesame seeds, peanuts, lentils, chickpeas, and oranges
GABA (gamma-aminobutyric acid)	Mental health	Oats, rice and quinoa
Magnesium	Energy	Leafy greens like spinach and cabbage, avocado, peppers, peanuts, pumpkin, plain yoghurt, beans, oranges, raisins and chocolate
Omega 3 fatty acids	Mental health	Sardines, turkey breast, shrimp, garlic, spinach, soy beans, oats, brown rice, cheese and sunflower seeds
Selenium	Mood	Lima beans, brown rice, sesame seeds and cabbage
Tyrosine	Production of neurotransmitters	Tuna, beef liver, avocados, soy sauce, yeast extract, bananas, raisins and tomatoes
Tryptophan	Production of serotonin	Skinless turkey, plain yoghurt, milk, eggs, cottage cheese, peanuts/soy nuts, pumpkin, sesame seeds, soy milk or spinach and cabbage
Zinc	Immune system	Shrimp, fortified breakfast cereal, cashews, cheddar cheese, low fat yoghurt, chickpeas, lentils, chicken (dark meat), beef mince

Cooking and protein digestibility

Foods that benefit from cooking include high protein plant foods like African yam and soybeans. According to Ene-Obong & Obizoba (3), “soaking and cooking African yam beans improves their protein digestibility”.

Heat, whether from cooking or sprouting contributes to the destruction of anti-nutrients. Anti-nutrients are naturally present to prevent the breakdown of proteins into smaller components, but are degraded with a rise in temperature. In addition, proteins like collagens found in cartilage and connective tissues of meats, can be broken down when cooked in moist heat.

Cooking and starch digestibility

By increasing the temperature to above 70°C (158°F) one can gelatinize starch and improve its digestibility. On the other hand, Englyst (1985), also cited in BeyondVeg.com (4) that “some resistant, or indigestible, starch is formed by cooking”. These resistant starches are present in small quantities in rolled and steamed oats. Uncooked oats

however do not contain resistant starch. In other words, we absorb and utilise less starch from oats when they are cooked.

Effect of heat on minerals

Cooking is not necessarily linked to nutrient loss, whereas high temperatures may affect vitamins, it does not lead to mineral loss. Nonetheless, whenever possible, it is desirable to eat fruits and leafy vegetables raw or to cook them as little as possible.

Cooking and vitamin preservation or loss

Vitamin loss depends on various factors, ranging from solubility in water, exposure to air, light, acid and alkaline environments, storage and exposure to heat. Not all vitamin depletions have a detrimental effect on health and certain vitamins become abundantly available in cooking, such as Pantothenic acid- B5. The vitamins whose deficiencies are worrisome are: Vitamin A, D, E (which are fat soluble), thiamine-B1, riboflavin-B2, niacin –B3, folate –B9, and cobalamin-B12, (which are water soluble).



- Vitamin A is relatively stable and not easily affected by exposure to heat.
- Thiamine is influenced by temperatures above 100°C (212°F), while heat doesn't lead to riboflavin- B2 and biotin- B7 loss (4).
- Oil soluble vitamin D, E, K and water soluble B12 are not affected by warm conditions.
- In general, cooking, with the exception of steaming, causes loss of vitamin C. Prolonged cooking can cause a 15-55% vitamin C loss (5).
- Niacin - B3 and folate - B9 are destroyed at high temperatures.
- The effect of heat on pyridoxine- B6 is not clear.

To preserve vitamin loss, it is recommended to use fresh foods and steam leafy vegetables. Furthermore, one should avoid the peeling of vegetables, lengthy soaking of grains or seeds and prolonged cooking times.

Conclusion

Armed with the above information, we can understand the necessity of choosing nutrient dense foods for good physical and mental health and to prepare them wisely. All of the aforementioned nutrients are found in a nutrient dense diet. Therefore, meals have to be properly balanced during preparation. Foods should be eaten in a way that would enable absorption of nutrients. Vitamins that are affected by heat are consequently affected by the various cooking methods. In Nigeria, we boil our meat, fry it and stew it before eating. To preserve nutrient loss, it would be beneficial to use fresh foods, steam leafy vegetables instead of boiling and to avoid long cooking times.

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www.celiapennyfoundation.org



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