

Food and Healthy Brain Function

Abstract

Food is an integral part of our life and it is required for the sustenance of the human subject. Besides being a source of energy, food can also help in improvement of growth and is particularly significant in optimal brain function. Here, we discuss how food can be used as a tonic for healthy brain function. If we give our brain the right nutrients, we will be able to think quicker. We will have a better memory.

Keywords: Food, Nutrients, Brain Function.

Introduction

Food not only satisfies our hunger but also protects us from acquiring wide range of diseases and infections. In certain cases, food serves as a natural means of defence against pathogens. As we know fruits and vegetables rich in Vitamin C can lower the risk of HINI influenza which is a topic of great concern today.

Based on this mindset, a new branch of science known as "NUTRACUETICALS" is developing rapidly and gaining lots of significance these days. "Brain foods" are those foods which improve brain function. A diet heavy in omega-3 fatty acids, for example can help keep the blood vessels of the brain clear of blockages and allow nerve cells to function at a high level. In fact, the present work is an attempt towards the generalization of work done by Berr et al.¹, Doughman et al.² and Feldman³.

Nutrition and the Brain

Nutrition affects the brain in three ways. The cell itself needs proper nutrition to carry on its functions just like any other cell in the body.

1. The myelin sheath covers the axon of the cell like insulation covering electrical wires. It speeds transmission of electrical signals along the axons, the "wires" of the brain. Deficiencies of nutrients that compose myelin, such as essential fatty acids, delay nerve impulse transmission.
2. The neurotransmitters, such as serotonin, dopamine, and nor-epinephrine carry messages from one cell to the other and affect mood as well as thoughts and actions.
3. Some of the nutrients in the food we eat become part of the neurotransmitters that help us think. Neurotransmitters are probably the biological explanation for the food-mood connection.

How the Brain Uses Nutrients?

The brain uses carbohydrates for energy and omega-3 fatty acids for forming its cell structure. B vitamins play an essential role in brain function. In combination with folic acid, vitamins B6 and vitamin B12 help manufacture and release chemicals in the brain known as neurotransmitters. The nervous system relies on neurotransmitters to communicate messages within the brain, such as those that regulate mood, hunger, and sleep. In addition, foods rich in antioxidant nutrients, such as vitamin C and vitamin E and beta-carotene, help protect brain cells from free-radical damage caused by environmental pollution. Protection against free radicals is important in protecting the brain.

Food Groups

Proteins

Protein is found in meat, fish, milk and cheese. Protein provides the building blocks for most of the body's tissues, nerves, internal organs (including brain and heart). Proteins are used to make neurotransmitters and are essential to improve mental performance.

Carbohydrates

Carbohydrates enhance the absorption of tryptophan, which is converted into serotonin in the brain which gives a feeling of calmness. Glucose is the brain's primary source of energy. Omega 3 fatty acids are essential to the optimum performance of the brain. Lack of Omega 3 fats in the diet can lead to depression, poor memory, low IQ, learning disabilities and dyslexia.



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Minerals

Minerals are also critical to mental functioning and performance. Magnesium and manganese are needed for brain energy. Sodium, potassium and calcium are important in the thinking process and they facilitate the transmission of messages.

Vitamins

Different vitamins have following effects on brain functioning.

1. Vitamin C is required by the brain to make neurotransmitters.
2. Vitamin B12 is vital in maintaining healthy myelin, the tissue that covers and insulates nerve tissue.
3. Vitamin B6 deficiency causes hyper-irritability and fatigue.
4. Folic acid deficiency seems to affect neurotransmitter function, resulting in symptoms associated with depression.

Iron

The symptoms of iron deficiency include irritability and diminished mental alertness. Iron is necessary for healthy brain tissue and for adequate neurotransmitter function.

Calcium

Calcium is not only important to growing bones, but also to growing brains. Children with calcium deficiency may show impaired behaviour and learning.

Fiber

Soluble fiber, such as fruit pectin, helps lower the glycemic index of foods, there by having a stabilizing effect on blood sugar.

Water

Water is like a fuel for the brain. For proper functioning of brain optimum quantity of water should be consumed. Daily 1.5 to 2 litres is required to keep brain hydrated.

DHA (Docosahexaenoic Acid) as a Brain Food

DHA is the primary structural component of brain tissue, so a deficiency of DHA in the diet could lead to a deficiency in brain function. In fact, research is recognizing the possibility that DHA has a crucial influence on neurotransmitters in the brain, helping brain cells better communicate with each other.

Foodstuffs which are good for Brain

Egg Yolks

A healthy benefit of egg yolks is that they contribute choline to the diet.

Spinach

Spinach helps protect the brain from oxidative stress while reducing the risk of suffering from an age-related decline in function.

Yellowfin Tuna

A cold-water fish, yellowfin tuna is a rich source of omega-3 fatty acids. Consuming foods rich in omega-3 fatty acids keeps cells' membranes flexible and maximizes their ability to allow important nutrients in. Yellowfin tuna is rich in the B vitamin niacin, which also protects the brain against Alzheimer's disease.

Cranberries

Animal studies suggest that cranberries protect brain cells from free-radical damage.

Moreover, consumption of this tart fruit is associated with improvements in memory, balance and coordination.

Sweet Potatoes

Sweet potatoes are especially brain-nourishing. They are rich in vitamin B6, carbohydrates and antioxidant nutrients.

Strawberries

It reduces the risk of age-related brain decline.

Kidney Beans

It improves cognitive function. One cup of cooked kidney beans contains almost 19% of B-vitamin. Kidney beans are rich in inositol. Inositol may improve symptoms of depression and mood disorders.

Raisin Bran

It prevents migraines and headaches. Raisin bran provides carbohydrates, iron, B vitamins, folic acid, calcium and magnesium. These are all important nutrients for brain fuel, as well as health and vitality. In addition, magnesium is a mineral that helps relax blood vessels, preventing the constriction and dilation characteristic of migraine and tension headaches.

Wheat Germ

Wheat germ is a powerful brain food because it is rich in vitamin E, selenium, choline and magnesium. Another good source of choline is peanuts.

Importance of Breast Milk:

Protein of breast milk has high amounts of amino acid taurine, which has an important role in the development of the brain and the eyes.

Fats in breast milk are practically self-digesting, since breast milk also contains the enzyme lipase, which breaks down the fat. Fat is the main source of calories for babies-and babies need lots of calories to grow well ! Also, fat in human milk has large amounts of certain omega-3 fatty acids, which are important for brain development.

Vitamins and minerals in human milk are bioavailable that is they get absorbed well. Breast milk contains substances that enhance the absorption of minerals and vitamins.

Immune Boosters

In each feeding mother delivers millions of living white blood cells to her baby to help baby fight off all kinds of diseases. Breast milk also contains factors that prevent microbes from attacking, and a long list of other antiviral, antibacterial and antiparasitic factors.

Conclusion

The foods we eat directly affect the performance of the brain. It has been proven that by eating the right food, we can boost our IQ. Healthy food keeps our mind healthy.

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