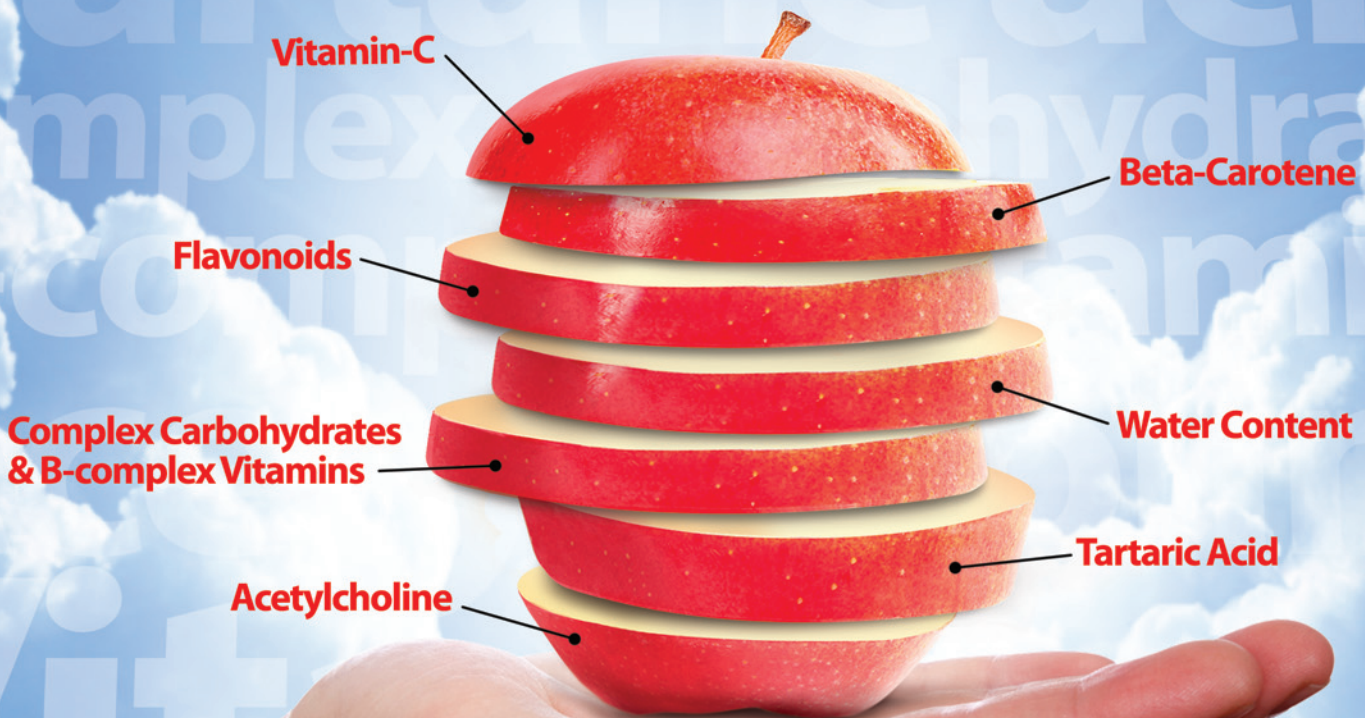


Brain Benefits of **APPLES**



Apples contain nutrients that work together to keep our brains healthy. See over for more information on apples' brain benefits and an explanation of how apples impact brain chemistry, and in turn, mood.

Brain Benefits of Apples

Vitamin-C - a powerful antioxidant that prevents free radicals* from damaging healthy cells thereby helping in the prevention of memory loss and accelerated aging. Memory loss often leads to feelings of frustration, thus increasing the risk of depression.

**Molecules responsible for aging and tissue damage. The increased presence of free radicals can affect brain and nerve cells which can lead to diminished brain function, memory loss, as well as contributing to the onset of cancer, heart and cardiovascular diseases.*

Beta-carotene - a red-orange pigment found in the skin of most apples, beta-carotene is an antioxidant that is converted to vitamin A in the body. It has been shown to increase thinking ability and heighten alertness, which aids in elevating mood.

Flavonoids - apples are rich in flavonoids which function in the human body as antioxidants and deliver anti-inflammatory and anti-cancer effects. The important flavonoids in apples are quercetin, epicatechin, and procyanidin B2. It has been shown that unprocessed, fresh apples contain the greatest amounts of flavonoids compared to any other fruit.

Water content - apples are high in water content (80-85%), which aids in the much needed hydration of the brain to ensure increased energy and concentration.

Tartaric acid - in addition to giving apples their tart flavour, tartaric acid has been shown to aid in digestion by soothing the gut's nerve cells, which in turn positively affects mood.

Complex carbohydrates and B-complex vitamins - apples are a good source of complex carbohydrates and B-complex vitamins, critical nutrients for balanced serotonin levels. The slow digestion of complex carbohydrates allows for the gradual and long lasting release of serotonin. Serotonin is a "messenger chemical" that boosts feelings of optimism, self-esteem, relaxation, and security. Adequate levels ensure good concentration and deep sleep. Riboflavin, thiamin, and pyridoxine (vitamin B-6), found in apples, work as a team to ensure good health and an optimal functioning brain and nervous system.

Acetylcholine - the juice of apples aids in the production of acetylcholine, known as the "memory chemical." According to Thomas Shea, Ph.D. of the University of Massachusetts, apple juice "pushes" production of this memory chemical in a way that is similar to the popular Alzheimer's drug Aricept. He recommends aiming for 16 ounces of fresh, unsweetened apple juice daily or as many as 2 to 3 apples a day to boost memory chemical production in the brain!* *Chan, A. Journal of Alzheimer's Disease, August 2006; vol 9



How the Brain Functions

Neurotransmitters are the brain chemicals that communicate information throughout the brain and body. They relay signals between nerve cells called neurons. Neurotransmitters can affect mood, sleep, concentration, weight, and can cause adverse symptoms when they are out of balance. Food sources, such as apples, possess those important nutrients that not only keep the brain well hydrated but also provide the fuel to keep neurons sharp.

Our Nervous System - The "Brain Forest"

The human nervous system can be likened to a forest. In a forest, trees are supported by their roots, which absorb nourishment from the forest floor and are afforded protection by surrounding trees. Similarly, a brain receives nourishment from food and is best protected when given vitamins and minerals found in healthy foods, such as apples, to absorb. The brain forest analogy can further be described as follows:

- Neurons (nerve cells) are the smallest functioning part of the nervous system.
- These cells "talk" to one another and other tissues via electrical messages.
- Neurons are shaped like a tree; messages or signals flow from the branches (dendrites) of the tree down through the "trunk" (axon) and into the "roots" (axon terminal).
- The "roots" are where all the cool stuff happens!
- Sending "trees" (neurons) and receiving "trees" (neurons) never touch; there is a space between their "roots" called a synapse – so how do the messages reach the other side? Tiny sacs called "neurotransmitters" sit along the "roots" (axon terminal) of the "tree" and wait to be filled, almost like a balloon; once filled to capacity, they can float over to the other root.
- The "balloon" deflates and is absorbed back into the receiving "tree roots" ready to be used again.
- Disruption of even one "balloon" (neurotransmitter) can throw off the "talk" between neurons (trees) thus affecting our physical, emotional and mental processes.

Worldwide efforts to preserve the earth's rainforests are a great reminder of the energy we should be devoting to protecting our "brain forest." When choosing which foods to eat this winter, consider foods that will keep your brain healthy, such as apples. As the control centre of the body, your brain deserves every effort you make to keep it healthy. And best of all, you'll feel better for it.

