

Food For Thought

General Articles - Brain Health

Want to be smarter? It was once thought that our intelligence was set in stone and that as we aged our brains cells died and weren't replaced. But the latest research shows that our brains continue to develop throughout our lives. By avoiding harmful food and increasing our intake of some especially helpful types of food we can help maintain a healthy brain.

You are what you eat.

The day should always start with a healthy breakfast. The brain needs a steady supply of glucose and many studies have shown that skipping breakfast reduces mental performance. But the emphasis is equally on "healthy" as "breakfast". Junk food should be avoided or at least kept to a minimum: fizzy drinks and sugary snacks have been shown to reduce mental performance. A breakfast such as high protein beans or Marmite/Vegemite on wholemeal toast - these yeast extracts have a high level of valuable B vitamins – is recommended. Cereal is a good choice although highly processed versions with added sugar should be avoided; adults should low-fat milk unless their doctor recommends to the contrary.

An omelette and salad is a good choice for lunch. Eggs are rich in choline (although those watching cholesterol levels may have to limit them), which your body uses to produce the neurotransmitter acetylcholine. Low levels of acetylcholine are associated with Alzheimer's disease, and some studies suggest that boosting dietary intake may slow age-related memory loss. A salad packed full of antioxidants, including beta-carotene and vitamins C and E, helps to mop up damaging free radicals. In the brain, antioxidant molecules wage war on free radicals which can harm brain cells and affect brain function. Many scientists believe that ageing and some diseases can cause the body's antioxidant defences to become damaged by the free radicals. These antioxidant-rich foods are thought to offer protection by providing an extra defence, keeping the free radicals in check.

The US Government Department of Agriculture recently presented a Top 20 list, which provides a helpful guide to healthy food in a report entitled: "Lipophilic and hydrophilic antioxidant capacities of common foods in the United States." Perhaps a more descriptive title would be "The Top 20 Antioxidant-rich Foods."

The USDA nutritionists examined more than 100 different kinds of fruits, vegetables, nuts, spices, cereals and other foods. Using an analysis method called "oxygen radical absorbance capacity (ORAC)", they were able to determine the lipid soluble (lipophilic) and water soluble (hydrophilic) antioxidant capacities of the food samples. They also tested the effect of two different processing methods: cooking and peeling.

Starting at the bottom

The results weren't altogether surprising: fruits, vegetables and beans claimed nearly all the spots in the Top 20.

20. Gala apples

19. Plums

18. Black beans (dried)

17. Russet potatoes (cooked)
16. Black plums
15. Sweet cherries
14. Pecans
13. Granny Smith apples
12. Red delicious apples
11. Strawberries
10. Raspberries
9. Prunes
8. Blackberries
7. Artichokes (cooked)
6. Cranberries
5. Blueberries (cultivated)
4. Pinto beans
3. Red kidney beans
2. Blueberries (wild)
1. Small red beans (dried)

The small red bean looks like a kidney bean - same colour and shape - except that it is slightly smaller. It is also known as the Mexican red bean, but is grown in many parts of North America, along the US/Canada border. Although some of these foods are not available in New Zealand e.g. wild blueberries and the Mexican red bean, most of them are readily available in our supermarkets.

To cook, or not to cook...

The USDA list is very useful, but it is important to remember that the best way to get an adequate intake of antioxidants is not by eating bowls of dried small red beans each day, but rather to eat a wide variety of antioxidant-rich foods which will ensure an adequate intake of other useful nutrients, such as ellagitannin, a substance that has been shown to help prevent the growth of cancerous cells and is found in raspberries and strawberries. And pecans will add copper and potassium to the diet. Pinto and kidney beans are good sources of folate (sometimes called vitamin B-9), which may help lower homocysteine levels. And blueberries deliver a chemical called anthocyanin that has been shown to help protect brain cells.

As you might imagine, most antioxidant foods lose some of their antioxidant capacities in processing. (The most notable exception is the tomato; the antioxidant lycopene is enhanced by cooking.) The study authors stated that "fresh" is the unsurprising best choice over frozen, cooked or otherwise processed. So while blueberry pie may seem like a somewhat healthy treat, it does not begin to compare with a bowl of blueberries, picked fresh from the meadow if you can (or bought from your local greengrocer if wild ones are not available – the difference is marginal). And don't ignore other fresh fruit and vegetables which did not quite make the Top 20: carrots, peppers and the cruciferous vegetables (broccoli, cauliflower etc) are all essential parts of a balanced diet and many are believed to protect against specific diseases. Nuts are also recommended: walnuts are an excellent source of omega-3 fatty acids and also provide vitamin B-6 and folate. Almonds are a good source calcium and provide magnesium, which helps in its absorption. The ubiquitous peanut contains good amounts of niacin, folate, vitamin E, and a rich combination of

minerals and the high selenium content of Brazil nuts is especially valuable in selenium-deficient New Zealand.

Finish off with yoghurt. It contains the amino acid tyrosine, needed for the production of the neurotransmitters dopamine and noradrenalin, among others. Studies indicate that tyrosine becomes depleted when we are under stress and that supplementing our intake can improve alertness and memory.

Have a mid-afternoon snack to maintain glucose levels. But no highly processed foods such as cakes, pastries and biscuits, which contain trans-fatty acids. A study on rats and mice raised on the rodent equivalent of junk food found that they had reduced cognitive function, experiencing difficulty in finding their way around a maze, and showing impaired memory.

One of the best brain foods is fish rich in omega-3 fatty acids, in particular docosahexaenoic acid or DHA, which also appears to protect against dementia. Recent studies found that older mice from a strain genetically altered to develop Alzheimer's had 70 per cent less of the amyloid plaques associated with the disease when fed on a high-DHA diet.

Anti-oxidant packed strawberries and blueberries are recommended for dessert, preferably without the addition of dairy treats like cream or ice cream. Rats fed on these fruits showed improved coordination, concentration and short-term memory.

The next issue of Headlines will contain a new report by the Harvard School of Public Health: "There is compelling evidence that a diet rich in fruits and vegetables can lower the risk of stroke".