

## Kale (green leafy vegetables)

- Kale is a good source of vitamin E that can help to prevent cognitive decline by reducing oxidative damage in the brain, and vitamin K, a powerful anti-oxidant that protects fat.
- The folate in kale may help lower levels of homocysteine (a non-protein amino acid) in the blood - that may trigger the death of nerve cells in the brain.

## Turmeric

- Turmeric contains curcumin that is capable of crossing the blood-brain barrier, which is one reason why it can act as a neuroprotective agent in a wide range of neurological disorders.
- It also improves your brain's oxygen intake, keeping you alert and able to process information.

## Nutritional values of 10 selected brain foods (raw where applicable)

Brain Food	Calories	Fat / Saturates	Total Carbs	Dietary Fibre	Total Sugars	Protein	Sodium
Avocado	160 kcals	15g / 2g	9g	7g	1g	2g	7mg
Beetroot	43 kcals	0g / 0g	10g	3g	7g	2g	78mg
Blueberries	57 kcals	0g / 0g	14g	2g	10g	1g	1mg
Broccoli	34 kcals	0g / 0g	7g	3g	2g	3g	33mg
Walnuts	645 kcals	65g / 6g	14g	7g	3g	15g	2mg
Coconut Oil	862 kcals	100g / 86g	0g	0g	0g	0g	0mg
Egg Yolks	317 kcals	27g / 10g	4g	0g	1g	16g	48mg
Salmon	208 kcals	13g / 3g	0g	0g	0g	20g	59mg
Kale	50 kcals	1g / 0g	10g	2g	0g	3g	43mg
Turmeric	345 kcals	10g / 3g	65g	21g	3g	8g	38mg

Based on 100g Values. Source: [nutritiondata.com](http://nutritiondata.com) - sodium x 2.5 = salt level

## Health Problems

- The only problems with these foods would be the excess fat intake if too much is consumed.

## The Bottom Line:

It is incredibly important that we nourish the brain. After all, it is what keeps us alive and able to cope with life and its demands. So apart from beneficial fats, proteins and carbohydrates these aforementioned foods contain most of the essential nutrients that can help to support the health AND the optimal functioning of the brain. These foods also help to create a healthy diet full of colour, taste and vitality. So, start including these foods in your diet now!

# FOOD *in* FOCUS

## BRAIN FOOD

Each month our nutritionist **Gary Baverstock** provides some basic science and unbiased information, to help demystify certain popular foods in our diet.

## Brain Food

- The brain is primarily made up from nerve cells (neurons) - the cerebral cortex (largest part) has 15-33 billion neurons.
- Each connect by synapses to several thousand other neurons that communicate with one another by means of long fibres called axons.
- Axons carry signal pulses to distant parts of the brain or body targeting specific recipient cells, such as muscles, or the gut etc.
- The brain is also comprised of water and fats (lipids) [60%], which are the main building blocks of the extracellular (outer cell) membrane of the nerve cells - helping to act as electrical insulators and nerve signal impulses.
- It also contains glial cells that protect nerve cells, hold them in place, remove dead cells and provide nutrients.
- Brain tissue consumes a large amount of energy in proportion to its volume and gets most of its energy from glucose (i.e., blood sugar).

## Neurotransmitters

- Neurotransmitters, also known as chemical messengers, transmit signals from one neuron to another target neuron, glial, or muscle cell.
- Many neurotransmitters are synthesized from simple and plentiful precursors such as amino acids, which are readily available from the diet in the form of protein.
- Neurotransmitters play a major role in shaping everyday life and functions.

Neurotransmitters	Amino Acid Precursor	Function / Role
Serotonin	Tryptophan	Promote appetite, sleep, memory and learning, temperature, mood, focus, behaviour, muscle contraction
Dopamine	Phenylalanine / Tyrosine	Regulation of motor behaviour, reward system, pleasures related to motivation and also emotional arousal.
Adrenaline	Tyrosine	Improves ability to stay become alert, fight or flight (stress response - raises heart rate, blood sugar levels), sleep
GABA	Glutamine	Deal with stress, improved concentration levels, calmness and sleep

**Table: Neurotransmitters & Amino Acid Precursors and roles**

## Foods for optimal brain function

- Apart from proteins, fats and carbohydrates there are many key foods that support the brain:

### Avocado

- Containing both vitamin K to help prevent blood clots in the brain (protecting against stroke) and folate that improves cognitive function, especially both memory and concentration.
- It also contains monounsaturated fats, which contributes to healthy blood flow in the brain.

## Beetroot

- Beetroot is high in antioxidants that help remove toxins from your blood, and reduce inflammation.
- The natural nitrates in beetroot actually boost blood flow to the brain, helping with mental performance.

## Blueberries

- Blueberries are antioxidant-rich and also contain vitamin C, K & gallic acid that protects our brains from degeneration and stress.
- The antioxidants tend to accumulate in areas of the brain that are essential for intelligence and appear to directly interact with aging neurons, leading to improvements in cell signalling.

## Broccoli

- Its high levels of Vitamin K help to strengthen cognitive abilities and choline that helps to improve memory.
- It also includes a sizeable serving of folic acid, which can help ward off Alzheimer's disease - a lack of folic acid could lead to depression.

## Nuts (walnuts)

- They have high concentrations of DHA (Omega-3 fatty acid) that has been shown to protect brain health in newborns, improve cognitive performance in adults, and prevent or ameliorate age-related cognitive decline.
- Their fats can lower resting blood pressure as well as lower blood pressure responses to stress in the laboratory.

## Coconut Oil

- Coconut oil works as a natural anti-inflammatory, suppressing cells responsible for inflammation, especially in the brain, and can help to provide an alternate source of energy.
- Medium chain triglycerides can improve brain function in patients with milder forms of Alzheimer's.

## Egg Yolks

- Yolks contain choline that maintains the structure of brain cell membranes, is a precursor for the neurotransmitter acetylcholine that relays messages from the brain to nerves and muscles, and breaks down to bethane, a chemical that produces hormones related to happiness.
- A good source of B12, which serves numerous brain functions including formation of myelin - a substance that aids transmissions between nerve cells.

## Salmon

- More than two-thirds of the brain's fats are DHA, an omega 3 fat that is found in salmon, which makes up the majority of the cell membrane of neurons.
- It protects neurons from injury, reduces cerebral inflammation, helps produce neurotransmitters and is essential for quick information transfer down the axon, the neuron's highway.