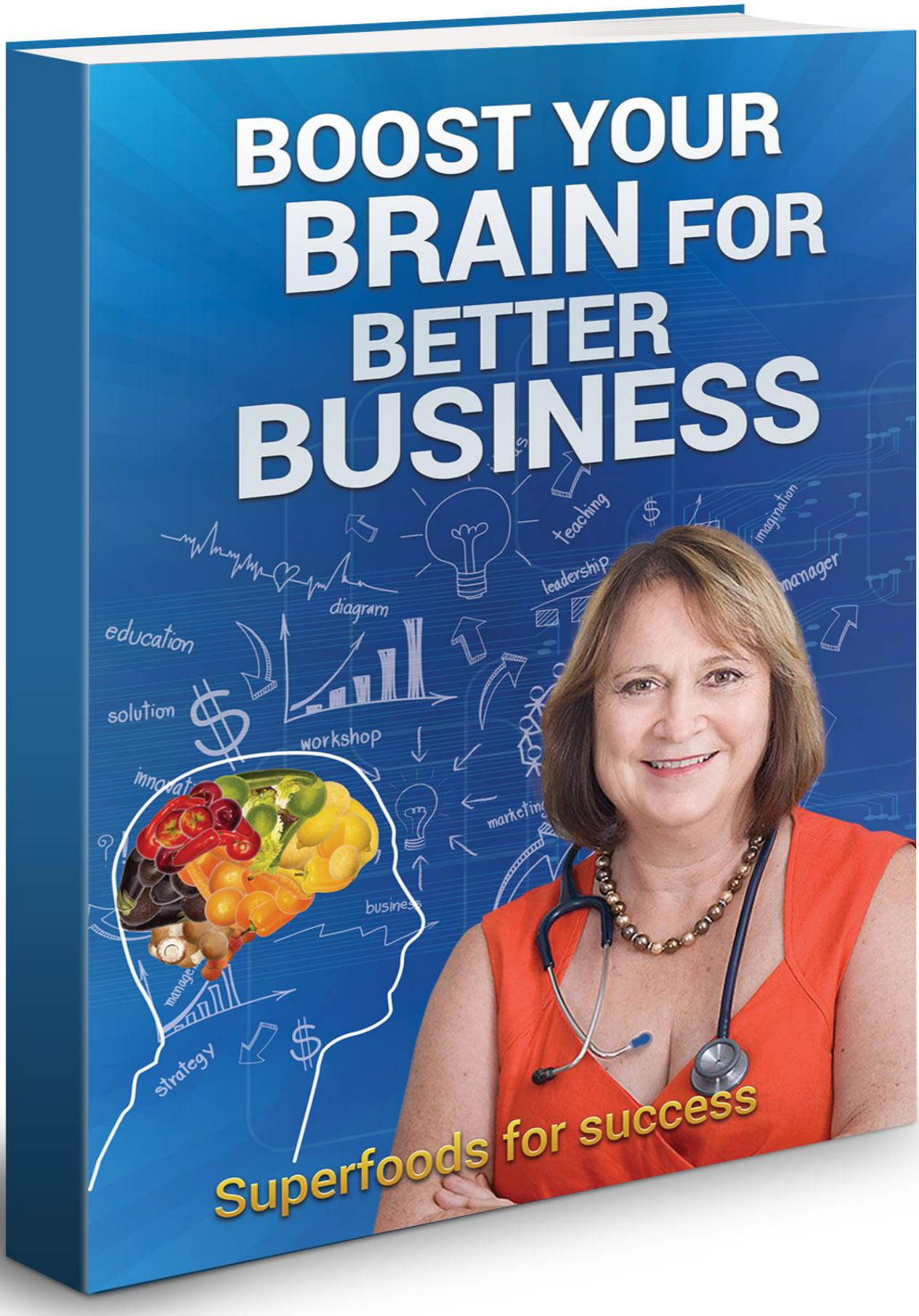
BOOST YOUR
BRAIN FOR
BETTER
BUSINESS
Superfoods for success

By

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CONTENTS

How to use this book

Some of you may want to read this book from start to finish and I would recommend that approach as there is a logic and flow to how it is laid out.

However some of you may want to get straight to the **'How to'** part to see how your diet stacks up and what to do. If that's the case, jump straight in at **Chapter 5** to see our sample meal plan and get started with helping your brain work better by changing your diet. Then you can go back and read the various chapters at a later date.

We also have our **30 day detox program** – more about that later- so you can go all the way and change the way you think and make decisions.

Coding for foods mentioned in this book

Whenever you see food mentioned in green boxes, that's giving you the green light to eat plenty of these healthy foods.

	√ **Good**

Chapter 1

Why boost your brain

My brain's Ok…. Isn't it?

Business can be a fierce contest today and we all need an edge on our competitors. In setting ourselves head and shoulders above the competition we look for unique selling points, strategic marketing tactics and adding value to our products. We closely examine key performance indicators in our staff and boost productivity with leadership and sales training.

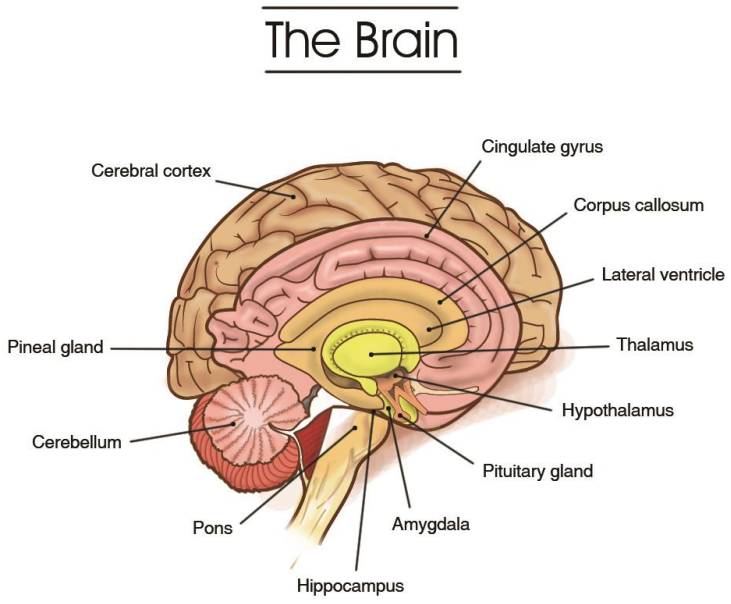
However have you thought about how your own performance could be holding you back? Do you think clearly, make decisions easily and keep many thoughts juggling around in your head at the one time? Do you sleep well and feel rested in the morning?

For too many of us, we overwork, eat food on the run and don't spend enough time and effort on how our own body and brain is functioning. Sure, we might go to the gym and join a weight loss program but what we need to focus on is function for both brain and body. While we might eat healthy to lose weight or develop muscle not many people eat well to improve their brain function. When I bring this up with clients and patients, they stare at me strangely and then go *'Oh yeh! Well that makes sense, I never thought of my brain needing certain foods before, but now you mention it, it needs nourishment just like the rest of my body.'* The key is realizing that what your body needs to get fit, lose weight, run a marathon, is not necessarily the same as what your brain needs. Eating healthy on its own may not be enough to feed the busiest organ in your body. With a few simple steps you can ensure that your brain is fighting fit and that's what's this book is about.

Do you feel tired every morning and drag yourself out of bed? Do you need coffee to get you moving? Do you have trouble making decisions? Do you suffer from brain fog?

Perhaps you believe your brain is working well already. You still might be surprised to find out how much you can still do to free your neurones from the slow thinking of toxin laden cells and release those quick firing synapses to make brilliant snap decisions and learn new skills. In any case, read on to find out how you can simply and easily boost your brain power to its max with the right foods and nutrients.

How the brain works



The brain is a very complex organ. It controls many functions in our body and is the seat of our conscious thoughts as well as our emotions. How does it work?

You can divide the brain neatly into 3 parts

1) The **hind brain** is the most primitive.

This area controls basic function such as our breathing, pulse, blood pressure and temperature. Situated at the back of the brain, it is a vitally important area that we can't do without. As you may know, head injuries can cause this area to swell and bulge out the base of

the skull. Unfortunately we cannot survive injury to this area as it's so vital to survival. This area operates automatically without us putting any conscious thought into it and is present in most primitive animals.

2) The **mid brain** is where we make most of our brain hormones to control the body and also control our behaviour.

Electrical impulses from around the body give information to the brain about what our senses are picking up e.g. sight, smell, sound, taste and pain as well as what position our limbs and muscles are in. We then send signals back to our muscles telling us to move away from the bad smell or take our hand away from the hot flame.

We also produce brain hormones here which control what the other body glands should do, for example the thyroid, adrenals, kidneys and sex organs.

Our emotions are seated here too as well as memory. So we pick up the smell of ice-cream and are instantly transported back to childhood, to seaside holidays and happy emotions. Or we can equally be transformed into quivering jellies of fear by the sound of shouting and the memory of a scary teacher.

Both of these areas constitute the subconscious brain. They operate automatically without us putting much logical thought into how they work and we find it difficult to control our basic impulses like hunger, fear and libido.

3) The **fore-brain** or **cerebral cortex**

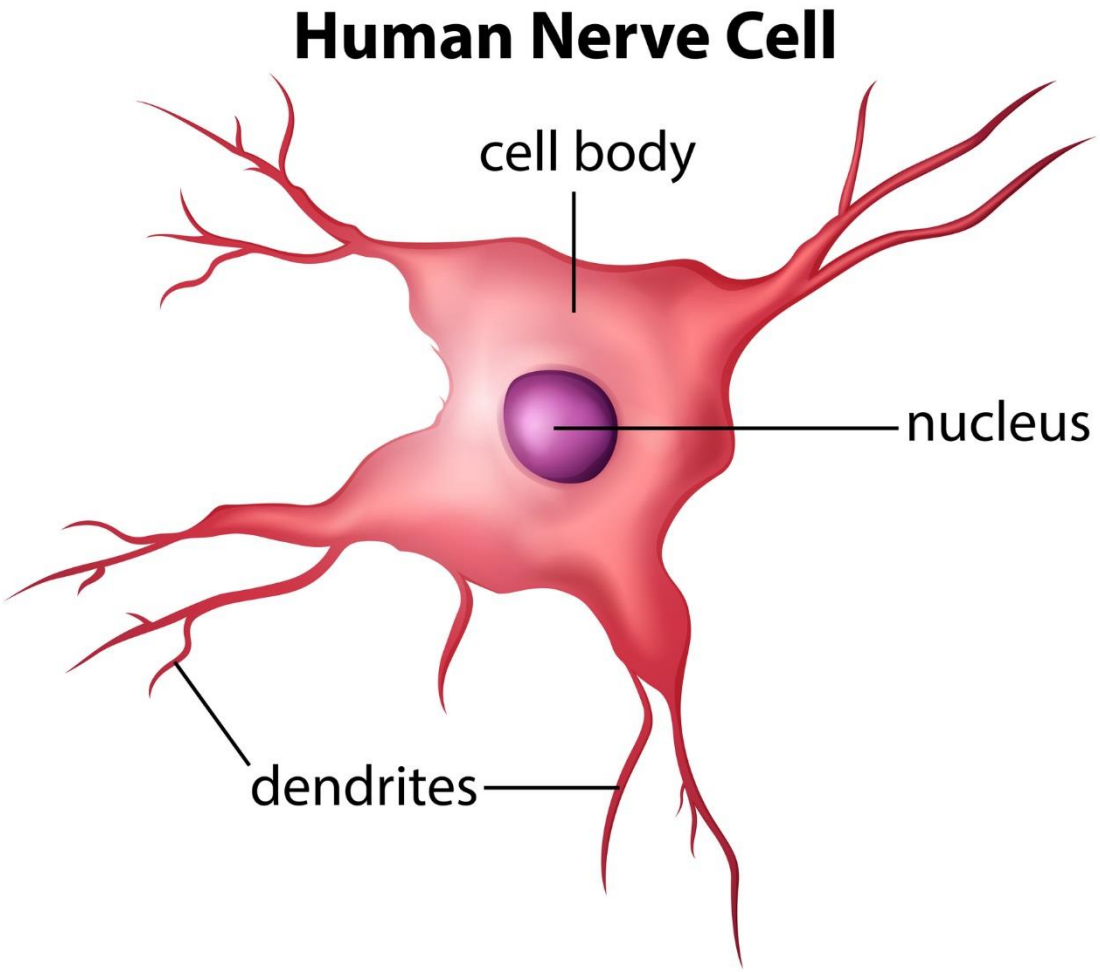
This is where we do our most conscious and complex thinking. This is where we are aware of our thoughts and is the seat of rational and logical thinking. This works more slowly than the rest of the brain, as anyone who has to make a complex decision will agree. So when you come across the big spider we immediately jump and scream (which is our sub-conscious brain) and then we rationalize it into thinking it can't harm us with our slower rational cerebral cortex.

Let's look under the microscope

The brain is composed mainly of two types of cells, neurones and glial cells.

The **neurones** are the cells that do the thinking and interacting with each other through connections called synapses. Now we could get all complicated and philosophical and start asking ourselves what exactly

is a thought? But we won't. Rest assured that thoughts are basically electrical impulses travelling between 2 neurones. Hence the saying 'he doesn't have two synapses to rub together.'



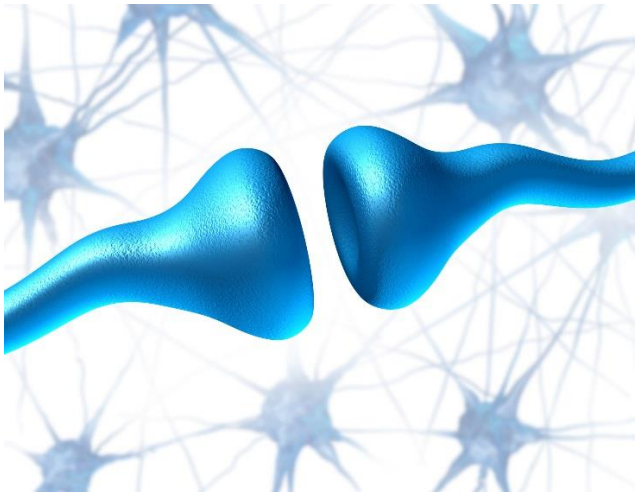
The **glial** cells have multiple functions: they provide structural support to the neurones, insulation and hormone support.

Neurones, however, are usually considered the most important cells in the brain. The property that makes neurones unique is their ability to

send signals to specific target cells over long distances. They send these signals by means of an axon, which is a thin fiber that extends from the cell and projects, usually with numerous branches, to other areas, sometimes nearby, sometimes to distant parts of the brain or body.

How synapses work

Axons transmit signals to other neurones by means of specialized junctions called synapses. A single axon may make as many as several thousand synaptic connections with other cells. When an electrical signal, travelling along an axon, arrives at a synapse, it causes a chemical called a neurotransmitter to be released. This travels across the space and excites the axon on the other side.



Synapses are the key functional elements of the brain. The essential function of the brain is cell-to-cell communication, and synapses are the points at which communication occurs. The human brain has been estimated to contain approximately 100 trillion synapses.

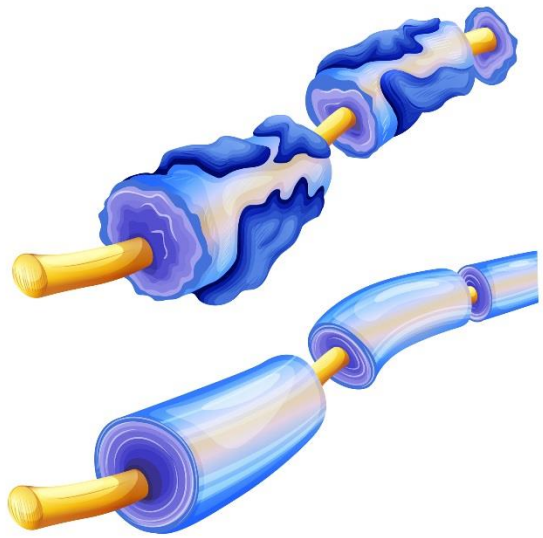
Brain neurotransmitters

At each of these synapses, small chemicals jump across the gap of the synapse so that the nerve signal can continue. These chemicals are called neurotransmitters. They include serotonin, dopamine, histamine, adrenaline, GABA, acetylcholine and glutamate. Over 50 chemicals have been found.

Some synapses can be modified – they can be strengthened by learning or weakened. These are the ones most used in memory. Glutamate is used most often in modifiable synapses and is stimulating. Excessive stimulation can be seen in Alzheimer's and Parkinson's disease. GABA, on the other hand tends to inhibit synapses and most sedatives act by enhancing it. Dopamine is involved in motor function as well as reward, pleasure and emotions. It's high in addictions and low in Parkinson's. Serotonin (our happy brain hormone) is made mostly in the gut, and is often low in depression. No wonder we feel sadness in out tummy.

So you can see that brain thoughts are a combination of electrical signals and chemical reactions. All of which need healthy nutrients to work properly.

Most of the space in the brain is taken up by axons, which are often bundled together in what are called nerve fiber tracts. The axons are wrapped in a fatty insulating sheath of myelin, which serves to greatly increase the speed of the electrical signal. These myelin cells are a type of glial cell which protects the axon from damage much like the plastic insulation around a copper electrical wire.



The myelin cells have small gaps between them and the electrical signal jumps from gap to gap increasing the speed of the signal. In diseases like multiple sclerosis the myelin sheath is stripped away in

places exposing the bare nerve. This makes the nerves more sensitive and causes malfunctions. Myelin is white, making parts of the brain filled exclusively with nerve fibers appear as light-colored white matter, in contrast to the darker-colored grey matter that marks areas with high densities of neurones.

Would all fat-heads please stand up?

About 80% of the brain is made up of water. Of the dry weight, about 2/3 is made up of fats, and the rest is proteins. So we all have heads made mostly of fat. Myelin, which is the sheath coating the axons, is 80% lipids and 20% protein. Therefore you can see that the brain's solid matter is all fats and proteins, with no carbohydrates.

However the brain runs on glucose, and uses it as its sole source of energy, when it is plentiful. This glucose normally comes from the carbohydrates in food. The brain requires about 100 grams of glucose per day, and gets this directly from the carbohydrates eaten and also from glycogen stored in the liver.

All carbohydrates are broken down during the digestive process into simple sugars. These sugars are stored in liver as glycogen to be made into glucose whenever energy is needed. When the glycogen stores are full, excess sugars in the diet are then converted into fat for long

term storage in fat cells around the body. So glycogen is our quick energy source and fat is our long term energy storage system.

When our blood glucose gets very low, we get hypoglycaemic and feel shaky, nervous and hungry. At these times we can't think very well and have trouble concentrating. Eating some healthy food at this point like protein, healthy oils and complex carbohydrate helps to give the brain energy, whereas eating carbs or sugar alone will make the blood glucose see-saw up and down. So a proper balanced snack will be better than sweets or candy.

How much capacity does our brain have?

The brain represents about 3% of our body weight but uses 20% of the body's energy. So it's a high energy organ. But the idea that we only use 10% of our brain is a complete myth. MRIs of active brains show that although at rest we may only be using 10% of our brain at that time, throughout the day we use 100% of the brain and all areas. However our brain has a great capacity for compensation and when we have a brain injury, other areas of the brain can take over the tasks so we don't necessarily lose much function.

The human brain is the most complicated evolutionary structure we have. It has been responsible for the greatest discoveries and human thinking over thousands of years. You could think of it as a high performance car, tuned to the highest level. And like all high end machines, you need to fill it with high-octane fuel to get the best performance. So to continue the analogy, your brain needs to be supplied with top-quality nutritional ingredients to allow it to perform at the highest capacity. Those chemical reactions and electrical impulses need the basic building blocks so they can perform. No point putting in low octane fuel and cheap oil and expecting to win the race.

Those tune-ups and services are a no-brainer when we buy an expensive car, but when it comes to our brains we expect to get high efficiency out of cheap food and poor servicing.

This means you have to eat well, giving yourself foods that are grown properly, using no chemicals, additives, pesticides, or other substances which can interfere with the brain's function. At the same time your fruit and vegetables should contain good levels of all the nutrients that we would expect from a healthy plant. Therefore it should be grown on healthy soil that contains *all* those nutrients. Livestock can only be healthy if they are given the right nutrients too, so your meat and fish should be from healthy sources too.

Great thinkers like Einstein, Newton and Galileo lived in times when little was known about food. They ate what was available. The difference is that for hundreds of years, food was grown in an organic manner, because that was all that was available. Soil was fertilised with manure, left-overs were dug back into the ground, fields were left fallow, and crops were rotated, to allow the soil to recover, and renew itself. It is only recently, since Big Agri and Big Business got involved, that the practices of monoculture have taken over, with millions of acres under the same crop, often genetically modified, helped to grow by using vast amounts of artificial fertilisers, pesticides and herbicides. As we shall see later these have been shown to have negative effects on the human brain. The quality of food produced by these methods has never been lower in nutritional value and lower in the

micronutrients which the body and brain need to function properly. This same food is also highly contaminated with additives, preservatives, emulsifiers and taste enhancers which food producers add to make food palatable.

Brain function – how do we measure it?

One of the main functions of the brain – is thinking power, often called cognitive function. This involves memory, understanding language, calculating, decision making and problem solving. These are all tested in various IQ tests around the world. Much of the research into brain function comes from research on **loss** of these functions such as memory loss, and poor cognitive function (research funding usually focuses on disease rather than optimal function unfortunately). Although much of the research comes from looking at dementia and Alzheimer's, that doesn't mean it doesn't apply to young minds too. The nutrients that are missing in memory loss in older age are the same ones that young minds need as well.

Aren't brain exercises enough?

There is a relatively new discipline called neuroplasticity, which says that the brain can be taught to do things better and more efficiently, by developing new linkages between neurones. This especially happens in areas where new skills are learnt and this is where those modifiable synapses come into play.

It used to be thought that the brain was a static organ, unchanging after a period of development in early childhood. Now it is recognised that the brain can change in major ways, in response to the stimulation of learning new skills and also in response to major injury. New neurones can develop, new synapses can appear and areas of the brain can change their function.

However, for these changes to happen, and for your brain to function to its full potential, it needs to be given the correct building blocks, and those are high quality nutrients. Proper eating, focusing on which nutrients are important to the brain, a few healthy recipes, a small amount of shopping to buy the best ingredients, and you can have your brain purring like a Rolls-Royce.

So read on to find out which nutrients are really good for your brain and where to find them.

Chapter 2

What food does your brain need?

In this chapter we are going to focus on specific foods your brain needs to function at the top of its game. We're going to look at specific nutrients which have the biggest effect on your brain and what foods to find them in.

Healthy Oils and fats

Because the brain contains a high percentage of fatty material, it makes sense that eating good quality fats will make a difference to

brain function. Evidence is accumulating that eating the correct type of fat can have both helpful and protective effects on the brain. The walls of all our cells are a mixture of fat and protein, we need fat soluble vitamins and we use fat as a long term energy source. All good reasons to include healthy fat in our diet.

Cholesterol is a fat that's a really important hormone in our body. It's the starting point for all our sex hormones such as oestrogen and testosterone as well as Vitamin D. It has a major role in defending our body from infection and is involved in every cell wall in the body. Our brain holds about ¼ of all our cholesterol and the myelin sheath coating our nerve cells is about 20% cholesterol.

Fats come in different types – saturated, mono-unsaturated and poly-unsaturated. Generally animal fat from meat, lard or dairy products is saturated, while vegetable oils tend to be unsaturated (coconut and palm oil are the exception). Saturated fats like butter and coconut oil tend to be solid at room temperature, while unsaturated fats like olive oil are liquid at room temperature. Fats or fatty acids, as they are also called, are chains of molecules and may be long, medium or short. The fats in butter, coconut and palm oil are a special type of saturated fat

called medium chain fatty acids which are easily absorbed and used for energy.

Omega fatty acids

One of the main types of fats found in the brain are called polyunsaturated fatty acids (PUFAs). These are often referred to as Omega-3, Omega-6 and Omega 9 fatty acids. We can make our own Omega 9 but we need to take Omega 3 and 6 in our diets – so they are called essential fatty acids as they are essential in our diet.

Evidence shows that the correct ratio of Omega-6 to Omega-3 should be about 1:1. Current Western diets have anything up to an Omega-6:Omega-3 ratio of 30:1. In other words we have far too much Omega 6 and not enough Omega 3. And the type of Omega 6 is important too. Omega-3 oils have anti-inflammatory effects. However some Omega 6s are anti-inflammatory and some are pro-inflammatory. Now a little bit of inflammation is OK, it keeps our immune system in tip-top condition, but when it becomes overpowering then you can get inflammatory diseases and processes such as premature aging, heart disease and arthritis. So it’s important to choose well. Source your Omega 6 from healthy sources and make sure it’s balanced out with plenty of Omega 3.

The main reason for the imbalance is that we have access to many sources of Omega 6 in our western diet whereas Omega 3 is in short supply. Omega 3 is mainly sourced from marine sources in the oceans whereas Omega 6 is a land based fatty acid – found in plants and animals.

The Omega fatty acids

Omega-6	**Omega-6**	**Omega-3**
Meat, eggs and dairy **Seed oils, peanuts** Arachidonic Acid	**Evening Primrose Oil** Linoleic Acid Gamma Linoleic Acid	**Flaxseed oil** Alpha Linolenic Acid
	Dihomo Gamma Linoleic Acid **Human breast milk**	
		Fish Oil Eiscosapentaenoic Acid (EPA) Docosahaxaenoic Acid (DHA)
Pro-inflammatory Omega-6	***Anti-inflammatory Omega-6***	***Anti-inflammatory Omega-3***

Examples of good omega 6 sources are evening primrose oil, breast milk, flaxseed, avocado, olive oil and other nut oils such as walnut and macadamia. Inflammatory Omega 6 is found in animal meat, dairy products, and processed vegetable cooking oils. However you don't need to exclude these foods from your diet totally. Just pick healthier versions of them. Animals fed grain, which is not their natural food, tend to have more inflammatory Omega 6 than grass-fed animals.

Source organic, free-range, grass-fed meat and chicken, dairy and eggs from organic free range sources.

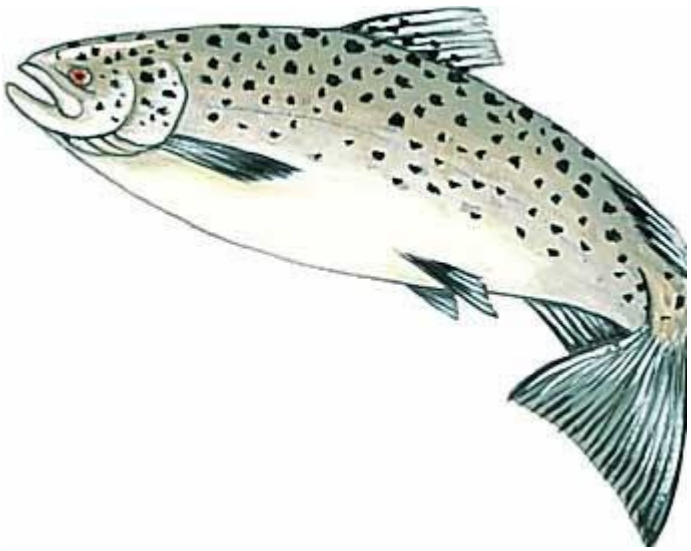
Why is Omega 3 and in particular DHA so important?

Omega-3 fats have been studied extensively in the brain. The two most active ones are docosahexaenoic acid (DHA), and eicosapentaenoic acid (EPA). DHA is the most abundant omega 3 in the membrane of brain cells. Many archeologists believe that it was access to DHA amongst tribes living along the shore that contributed to the development of our large brains. Evidence shows that humans started eating fish and shellfish before we evolved the large brains that we have now. Consumption of DHA was imperative to allow that evolution. With bigger brains we could now make complex decisions about accessing food, upright walking and running, cooking and

planning for winter and famine. Archeological evidence suggests that there is a direct relationship between access to food and brain size and that small differences in diet can have large effects on survival of a species. We know from examining populations in developing countries (where food is scarce) and in growing children, that not being able to access all the foods you need slows brain development and prevents the brain from reaching its full growth potential.

Where should we access Omega 3?

The richest source of these is oily fish, preferably wild caught. Tuna and salmon being at the top of the food chain are highest in omega 3. Krill oil, squid or calamari oil are also available, with reasonable amounts of omega-3.



Omega 3 starts in the ocean food chain as algae, which is eaten by small marine life such as krill. These small fish are eaten by larger fish and each time the Omega 3 is concentrated more and more in the muscle of the fish. Eventually the largest fish have the highest concentration. These large ocean-going fish also swim constantly developing large amounts of Omega3 rich muscle.

Unfortunately as well as absorbing Omega3 these large fish also concentrate any contamination. Bottom feeding shellfish and scavengers mop up toxic contaminants such as mercury and plastics which sink to the ocean floor. These toxins are concentrated as the small fish are eaten by larger fish until the level of mercury in the 'top of the food chain' fish is highly significant. This is why fish oil made from tuna should be tested for mercury levels and BPA. Pregnant women should avoid tuna, flake and swordfish and we should only buy fish oil capsules which have been tested. In this case, it pays to buy more expensive brands. Eating fish lower in the food chain such as krill and calamari ensure that toxin levels are less but we are interfering with the natural food chain of large mammals such as whales by scooping up all the krill for krill oil capsules. It is possible to concentrate Omega 3 from algae to make DHA and this could be the best source in the long run.

Omega 3 is also found in smaller amounts in healthy land meats such as organic beef and chicken. The omega 6:3 ratio is naturally much better in wild animals that roam over large areas as they concentrate Omega 3 in their muscles. This is why wild meat such as kangaroo, venison, ostrich and emu have higher concentrations of omega 3. Compare that to our sources of beef and chicken – cows standing around in paddocks all day barely moving except to amble to the grain trough. Chickens never moving, trapped in cages or in crowded barns.

So the message is buy wild meats including wild (not farmed) fish where possible and buy organic beef, and organic free-range chicken. Healthy fit animals make healthy fit meat.

Common plant sources of Omega 3 are flaxseed oil, walnuts, hazel nuts, hemp seeds and pecan nuts while smaller amounts can be found in some fruits like kiwi and black raspberry. Now you probably don't think of fruit and vegetables as being oily, but they do contain small amounts of oil. The only problem is you need to eat large amounts to get all your omega 3 and 6 needs from these sources alone.

Plant-based omega-3 sources like flax, hemp and chia seeds are high in ALA, but low in EPA and DHA. Although ALA is an essential nutrient,

not everyone can convert ALA to EPA and DHA so unless you have strong reasons for not doing so, try to get at least some of your Omega 3 from marine sources.

How much omega 3 should you get per day?

The minimum recommended dose of EPA and DHA is thought to be 500mg of each to prevent heart disease and prevent inflammation. Various studies quote different amounts, so there is no definitive daily amount. University of Maryland Medical Center recommends 1200mg DHA per day. A fish oil capsule is about half DHA so the ideal to aim for is around 3000mg fish oil per day.

1) *Circulating omega-3 polyunsaturated fatty acids and subclinical brain abnormalities on MRI in older adults: the Cardiovascular Health Study. J Am Heart Assoc. 2013 Oct 10;2(5). Virtanen JK, Siscovick DS, Lemaitre RN, Longstreth WT, Spiegelman D, Rimm EB, King IB, Mozaffarian D.*
2) *Unesterified docosahexaenoic acid is protective in neuroinflammation. J Neurochem. 2013 Nov;127(3):378-93. Orr SK, Palumbo S, Bosetti F, Mount HT, Kang JX, Greenwood CE, Ma DW, Serhan CN, Bazinet RP.*
3) *Effects of fish oil supplementation on learning and behaviour of children from Australian Indigenous remote community schools: a randomised controlled trial. Prostaglandins Leukot Essent Fatty*

Acids. 2013 Aug;89(2-3):71-9. Parletta N, Cooper P, Gent DN, Petkov J, O'Dea K.

4) *The importance of the ratio of omega-6/omega-3 essential fatty acids. Biomedicine & Pharmacotherapy 56 (8): 365–79. 2002. Simopoulos, A.P.*
5) *Brain foods: the effects of nutrients on brain function. Nature Reviews Neuroscience 9. 568-578 (July 2008). Fernando Gomez-Pinilla.*

Cholesterol, heart disease and saturated fat

For the last 30 years we have had it drummed into us at every opportunity that high cholesterol and eating too much fat, especially saturated fat causes heart disease. There has been masses of research on this topic some of it funded by drug and food companies with a vested interest in which way the pendulum swings. Recently there have been a re-awakening of interest by those who have questioned the status quo about saturated fat.

Saturated fat is not bad for us

After several lengthy reviews of all the research dating back to the 1950's to the present day, the general consensus is that heart disease is not caused by eating saturated fat. What we mistook as bad fat in an unhealthy diet will not put you at risk of heart disease. Those risks are actually worse with a sugary diet rather than fat. That doesn't

mean all fat is good. Fat from unhealthy inflamed animals won't help either. Like us, other mammals store toxins in their fat cells. It's like quarantining a virus on your computer. To stop noxious chemicals floating around in your blood stream, your body shifts them into fat cells, where they won't do any harm. But animals like cows, pigs and chickens do the same thing. So when you eat the fat of an unhealthy animal, you're eating their stored toxins too. Another good reason for going organic.

1) *Saturated fat is not the major issue.* *BMJ. 2013 Oct22:347. Malhotra A.*

2) *Association of dietary, circulating, and supplement fatty acids with coronary risk: a systematic review and meta-analysis.* *Ann Intern Med. 2014 Mar 18;160(6):398-406. Chowdhury R, Warnakula S, Kunutsor S, Crowe F, Ward HA, Johnson L, Franco OH, Butterworth AS, Forouhi NG, Thompson SG, Khaw KT, Mozaffarian D, Danesh J, Di Angelantonio E.*

Coconut oil is good for you

Coconut oil is a vegetable source of saturated fat. It mostly consists of a medium chain fatty acid called lauric acid. Medium chain fatty acids are quickly absorbed and used for energy. There is plenty of research showing that in Asian cultures like the Philippines and Sri Lanka, where

coconut oil is a staple in their diet that coconut oil reduces the risk of heart disease.

Lauric acid also has anti-bacterial and anti-viral properties. But not all coconut oil is good. Like many fats it depends how it is made. Using heat, pressure or chemicals to extract oils creates Trans fats.

So you want a cold pressed type of oil. This applies to olive oil as well as coconut oil. Cold pressing ensures that the healthy oil is not damaged by heat or chemicals.

Beneficial effects of virgin coconut oil on lipid parameters and in vitro LDL oxidation. *Clinical Biochemistry Volume 37, Issue 9. 2004: 830–835. K.G. Nevin, T. Rajamohan.*

Trans fats are harmful

Trans fats are fats whose shape has been artificially changed by chemical means. For example vegetable oils which are used to make margarine have hydrogen blown through the oil under pressure to make a solid fat rather than a liquid. This creates trans fats. These artificial chemicals are not recognized by nature so they are not broken down by bacteria – even rats don't like eating them. In this way they do not go rancid and last for a long time. Which is great for

food producers – they are used in many baked goods such as pies, sausage rolls and pastries.

However, we now know that the changed shape makes them sticky and inflammatory – increasing your risk of heart disease and stroke.

That's why margarines and spreads that are high in trans fats are not healthy.

You can find these trans fats in any processed baked goods, cake mixes, non-dairy creamers, salad dressings and margarines. By changing vegetable oil from liquid to solid, usually by blowing hydrogen through it under pressure, this process creates trans fats.

Any product that contains hydrogenated vegetable oils contains trans fat. Eighty percent of our trans fats come from hydrogenated vegetable oil which is processed in industrial quantities to make cooking oils. These are highly processed and inflammatory and shouldn't be reheated time and again which is unfortunately what happens in most restaurants. But it's not just heart disease, the brain also utilises trans fats when DHA (a type of omega 3) is in short supply.

Trans fatty acids and cardiovascular health: research completed? Eur J Clin Nutr. 2013 May;67(5):541-7. Brouwer IA, Wanders AJ, Katan MB

Low fat is not working

There is plenty of research showing that sugar is a more potent cause of heart disease than fats and oils and that we need healthy oils, not just for our brain but also for every cell in our body. Our fat intake has decreased over the last 30 years but obesity has risen astronomically. So clearly low fat is not working for weight loss either.

Cholesterol – the myths and truths

It seems that a high cholesterol and high LDL indicate an increased risk for heart disease and stroke. These are levels which are also increased in inflammation. It's generally accepted that inflammation is behind many of our common diseases these days such as heart disease, arthritis, aging and cancer. So it would seem logical that it's the inflammation that's the problem and a high cholesterol is the marker for that inflammation. When you eat a healthy diet, you reduce the inflammation, your cholesterol will come down and so will your risks.

What fats should I eat?

It is generally accepted that the Mediterranean diet is healthy, despite it being high in the dreaded fats. Most of the fat in the Mediterranean diet is in the form of olive oil, a monounsaturated vegetable oil.

Olive oil needs to be cold-pressed so that heat or chemicals do not alter the fat to trans fats or damage the nutrients. Virgin olive oil means that the oil comes from the first pressing.

Good sources of oils and fats

Avocado, nuts, seeds, coconut flesh, olives

Organic butter, organic cold pressed coconut oil

Virgin cold pressed olive oil, walnut oil, macadamia nut oil, other nut oils, flaxseed oil

Vegetable oils have a low smoke point so heating them creates more trans fats. So keep vegetable oils for salad dressings and dipping. The best oils for cooking are saturated fats which have a much higher

smoke point. Or mix both types to raise the smoke point of your favourite nut oil.

Oils for cooking

Organic butter or ghee for grilling, frying

Coconut oil for Asian style cooking

Mix organic butter and olive oil for a Mediterranean flavour

The bottom line

While the controversy rages on over cholesterol and the risks of heart disease and stroke, the best track you can take is eat a healthy low-inflammation diet and keep your cholesterol under control by dietary means. Eat a variety of healthy oils and always go for the highest quality organic variety you can afford. Its money invested in your health and future.

Protein

There has been little research done on the effects of protein on cognitive function. There is some evidence that protein deficiency has an adverse effect on brain functioning and that good quality protein in the diet is necessary for the proper development of the brain, both before birth and in early childhood. There are trials showing that protein deficiency especially in early childhood can lead to poor or delayed brain development.

How much protein should I eat?

A good rule of thumb is around 1g of protein per kg of weight. So if you weigh 70kg then you should have 70g of protein per day. Now most animal sources of protein such as meat or dairy offer around 25g of protein per 100g of meat. In other words only ¼ is protein, the rest is water, fats etc.

So if you weight 70kg then you need 70 x 4 or 280g of meat to give you 70g of protein. Should you eat more than that? Well there are studies showing a higher risk of cancer and heart disease with increasing amounts of protein so for an adult it shouldn’t be necessary to go above that amount. Unless of course you are involved in heavy

exercise. Some athletes require 2-3g protein per kg of weight depending on what type of exercise. Remember quality is key here. 300g of healthy organic meat per day is much better than 500g of cheap ground beef.

Is red meat OK?

Red meat has got a bad press as being risky for your health but, at the same time it's a great source of iron and zinc. Too much red meat has been associated with higher heart disease and bowel cancer. However I believe this is due to the poor quality of meat we buy. Beef cattle raised on grain and fed antibiotics and growth hormone don't make for healthy meat. Lamb is a bit better as lamb needs to be outside and roaming over grassland so is not intensively reared.

Chicken is reared intensively in barns, with overcrowding and frequent anti-biotics. So it's not a particularly healthy meat. These kind of chickens will be high in inflammatory Omega 6 fats. Choose free-range organic chicken which is allowed out into sunlight and gets daily exercise and a varied diet.

My advice is eating red meat once or twice per week should be ok as long as you stick to your daily needs and don't exceed it. Be choosy about your sources - high quality, organic grass fed beef or lamb, or

wild or game meat. It may be a bit more expensive but spending money on good quality food will save you money in the end.

Add vegetarian sources of protein

Two things are key in a healthy diet today. One is balance and the other is variety. Each food type has a different combination of nutrients from other foods in the same group so if you eat exactly the same source of protein all the time you may be lacking in certain nutrients you could better get elsewhere. So if you just eat chicken all the time, you will not get as much zinc as you could be getting from other sources. One of the best ways to ensure you get all the vitamins and minerals you need is to have a wide variety of foods in your diet. This applies to protein just as much as fat and carbohydrate too.

Vary your source of protein- adding vegetarian sources of protein decreases the risks of too much meat. So add pea protein to smoothies; quinoa or chia can be added to foods, hemp is a great vegetarian source of protein so add hemp powder to smoothies; and of course nuts and seeds are great sources of vegetarian protein. Legumes, such as chick peas, lentils, cashews and beans are important protein sources. Make sure soy and tofu are organic and fermented, as 95% of soy these days is genetically modified.

If you are vegetarian or vegan, make sure you get enough daily protein according to your needs and vary the sources so that you cover all your amino acid needs.

Good sources of protein

Vegetarian sources

Pea protein, hemp, chia, quinoa

Legumes such as lentils, chick peas, beans, cashews

Nuts – almonds, walnuts, macadamia, brazil nuts, hazelnuts

Organic fermented soy such as miso, tempeh and tofu

Meat sources

Organic free-range chicken

Organic lamb or beef

Wild meat such as kangaroo, emu, venison

Fish, shellfish – wild, not farmed if possible

Vitamins for good brain function

Vitamin D

This important vitamin is made from cholesterol activated by ultra-violet light. The cholesterol under the skin is changed by ultra-violet light and then the liver and kidneys finish the job of completing the active form of Vitamin D.

There is now more and more evidence that vitamin D has many more roles to play in the body than just its traditional one of preventing weak bones. Vitamin D is no simple molecule. It is a complex steroid, and trials are showing that it has an intimate part to play in correct brain development and cognitive function. The risk of skin cancer has been promoted to such an extent that people don't go out in the sun these days. In Australia, the Slip, Slap Slop campaign was the watchword. (Slip on a T-shirt, Slap on a hat and Slop on the sunscreen). This resulted in an epidemic of vitamin D deficiency. So much so that even the dermatologists of Australia have changed their recommendations and now suggest 5-10 minutes of sun exposure/day in summer and 10-15 minutes in winter. This has to be taken between 11am and 2 pm. The low angle of the sun in the morning and evening passes through too much atmosphere and cuts off the beneficial UV

light. You should also expose your torso, as that is where most of the stimulation is needed to produce adequate amounts of vitamin D. As vitamin D is fat soluble you find more of it around areas where you store fat – namely your stomach and buttocks. So make it easy on yourself and expose your tummy and buttocks for 10 mins per day whenever you can.

Vitamin D and brain power

Numerous trials have been done which show a correlation between vitamin D deficiency and poor cognitive function. In one trial, those with Alzheimer's disease had significantly lower levels of vitamin D than those without the disease.

Vitamin D receptors are widespread in brain tissue, and vitamin D's biologically active form [1,25(OH)(2)D3] has shown neuroprotective effects including the clearance of amyloid plaques, a hallmark of Alzheimer's disease. Associations have been noted between low vitamin D and Alzheimer's disease and dementia in both Europe and the US. Similarly, the risk of cognitive impairment was up to four times greater in the severely deficient elders (25(OH)D < 25 nmol/L) in comparison with individuals with adequate levels (≥ 75 nmol/L).

How do I get good levels of Vitamin D?

Well, the best way is to expose your body to the sun. Artificial vitamin D supplements work reasonably well but they don't stimulate the formation of cholesterol sulphate which is the natural form your body makes under the skin.

So first and foremost get some sun exposure and the correct way is as follows

1) Get sun exposure during the middle of the day between 11 and 2pm to get the full benefit of those ultraviolet rays
2) Expose your tummy and buttocks. You don't make much vitamin D on your face, nose and shoulders, but you do get skin cancers there, so cover those bits with a hat and expose your parts of your body with the biggest fat stores (vitamin D is a fat- soluble vitamin). So get out at lunchtime and lift up your T-shirt and expose your tummy to the sun. Or your buttocks! Guys get your shirt off.
3) Don't use sunscreen. This blocks out UVB rays
4) Stay in the sun for 15-30 minutes- 15 mins on front and 15mins on the back is ideal. This is sufficient time to stimulate vitamin D production but not long enough to burn. If you are particularly fair skinned then 10 mins might be sufficient. The good news is

that fair skinned people make vitamin D easily with little skin exposure and dark skinned people take more sun exposure to get vitamin D production going. So dark skinned people who cover up most of their skin are most at risk of low vitamin D levels.

Get your vitamin D levels checked especially during the winter and take supplements if it is low. You may have to pay privately for this test to be done but it could be worth it to find out just what levels your Vitamin D are. The ideal levels should be 75- 90 nmol/l. Under 25nmol/l is seriously low.

5) If you live in a country with long dark winters invest in a portable UVB light box to boost your vitamin D naturally.

Vitamin D deficiency and Depression

We have known that vitamin D deficiency is a potent cause of poor brain function, brain fog and low mood. Many people get depressed in countries where there is little UVB light during the winter and this is caused by low Vitamin D (known as seasonal affective disorder or SAD). Suicide is high in such places such as Scandinavia and Alaska. So now people have UVB light boxes at home to expose themselves

during the long winter. And workers take their UVB light boxes with them to work.

Some foods are marketed as being high in vitamin D such as sardines but really the amounts in such foods are not sufficient to be useful. So don't be fooled by the marketing – focus on your own body's production.

So vitamin D is really a hard working vitamin – it prevents depression, may aid in Alzheimer's and dementia, is a strong anti-oxidant and anti-cancer vitamin. Get it right to get your brain in tip top working order.

1) *Low serum vitamin D concentrations in Alzheimer's disease: a systematic review and meta-analysis. J Alzheimers Dis. 2013;33(3):659-74. Annweiler C1, Llewellyn DJ, Beauchet O.*
2) *Serum 25-hydroxyvitamin D levels and the risk of depression: a systematic review and meta-analysis. J Nutr Health Aging. 2013;17(5):447-55. Ju SY1, Lee YJ, Jeong SN.*
3) *Bright-light therapy in the treatment of mood disorders. Neuropsychobiology. 2011;64(3):152-62. Pail G1, Huf W, Pjrek E, Winkler D, Willeit M, Praschak-Rieder N, Kasper S.*

Vitamin K

Work has been done showing that vitamin K is also involved in good mental functioning. This is a substance which is produced by gut

bacteria so having a healthy gut is vitally important in getting your brain to work properly.

Recently studies have shown that vitamin K is necessary for good production of brain fats called sphingolipids. These are present in high quantities in brain cells and are involved in such important mechanisms as cell multiplication, cell messages and cell aging. They form a resistant outer layer for the cell and protect it against attack by harmful environmental factors. This would be very important in inflammation which can damage brain cells with harmful chemicals. Damage to these sphingolipids has been associated with Alzheimer's disease and other inflammation diseases. Vitamin K has therefore been thought important in thinking processes, emotions and behavior.

Some evidence suggests that vitamin D and vitamin K are interconnected, in that an adequate supply of vitamin K is needed for the correct absorption of vitamin D - another good reason for keeping these vitamins at optimal levels. Most healthy chemicals in the body whether it is vitamins or hormones work together so keeping the whole body is balance helps the brain keep functioning.

1) *Vitamin K, an emerging nutrient in brain function.* *Biofactors. 2012 Mar-Apr;38(2):151-7. Ferland G.*
2) *Active vitamin D and vitamin K as therapeutic agents for osteoporosis.* *2006 Sep;64(9):1639-43. Katagiri H. Nihon Rinsho*

Vitamin C

This is our most potent anti-oxidant vitamin. So it helps to prevent inflammation. In the brain, the nerve endings contain the second highest concentrations of vitamin C in the human body (after the adrenal glands).

Fruit contains high levels of vitamin C along with vegetables such as spinach, tomatoes and potato. Berries give you the biggest vitamin C bang for your buck, so fresh blueberries, forest berries, goji berries and acai berries also help to boost vitamin C levels.

Vitamin E

Vitamin E is well known as an anti-oxidant and helps prevent damage to cells by free radicals. Free radicals are thought to be damaging in brain aging and thinking or cognitive functions.

Vitamin E in aging, dementia, and Alzheimer's disease. Biofactors. 2012 Mar-Apr;38(2):90-7. Joshi YB1, Praticò D.

B Vitamins and Folate

Once again there is compelling evidence that B vitamins such as B1, B2 and to some extent B6 are all necessary for good brain function.

Lack of folate from leafy green vegetables puts up homocysteine levels and this is a risk factor for heart disease and stroke.

Vitamin B12 we mostly get from meat and dairy, so vegans may struggle to get enough. Nutritional yeasts, and fortified foods may contain Vit B12 but supplements may also be needed.

But B vitamins are essential to prevent cognitive decline. Numerous B group vitamins are connected with brain function. Vitamin B9 preserves brain during its development and memory during ageing. Vitamins B6 and B12, among others, are directly involved in the synthesis of some neurotransmitters. Vitamin B12 delays the onset of signs of dementia (and blood abnormalities), provided it is administered in a precise clinical timing window, before the onset of the first symptoms.

Adolescents who have a borderline level of vitamin B12 develop signs of cognitive changes. Low folate levels are also associated with cognitive dysfunction. Foods containing good amounts of folate are beef liver, spinach, black-eyed peas, asparagus, Brussels sprouts and avocado.

1) *B-vitamins for neuroprotection: narrowing the evidence gap. Biofactors. 2012 Mar-Apr;38(2):145-50. Nachum-Biala Y1, Troen AM.*

2) *The role of B vitamins in preventing and treating cognitive impairment and decline.* *Adv Nutr. 2012 Nov 1;3(6):801-12. Morris MS.*

Vitamin A

Vitamin A has been well recognized as important in the developing brain but it also helps with neuroplasticity, in other words your ability to develop new areas of the brain with new skills and abilities.

A vitamin for the brain. *Trends Neurosci. 2012 Dec;35(12):733-41. Shearer KD, Stoney PN, Morgan PJ, McCaffery PJ.*

Best food sources for vitamins	
Vit D	sunlight
Vit E	coconut oil, nuts, seeds, butter
Vit A	carrots, butter
Vit K	healthy gut bacteria, greens
Vit C	citrus fruit, berries, spinach
B vitamins	nuts, seeds, green leafy vegetables, meat, milk
Vit B12	meat, dairy, oysters, nutritional yeasts
Folate	leafy greens, liver, avocado

Minerals for the best brains

Zinc

We realized that zinc was an important mineral in 1963. Back then, we knew of only 3 enzymes that required zinc for their activities, but now we know of more than 300 enzymes. Zinc deficiency is a major world-wide problem with an estimated 2 billion people suffering from it. One of the major problems is the wide spread use of grain interfering with zinc absorption. Plus, food sources are weaker in zinc concentration than they used to be due to depleted soils.

So what are the problems of zinc deficiency? – poor brain function, poor growth and a weak immune system. Not only that but zinc is needed to make one of our most important brain hormones – serotonin. Serotonin is our happy hormone giving us feelings of contentment. Low serotonin is common in depression – some types of anti-depressant work by boosting our levels of serotonin by preventing its breakdown. So whatever levels of serotonin we have stay around longer. But instead of relying on medication, why not boost your serotonin naturally with its own building blocks.

Serotonin comes from tryptophan a natural chemical found in milk and chocolate. That’s why a hot milky drink before bed can help us relax

for sleep at night. But we also need zinc to go from tryptophan to serotonin. So low zinc means low serotonin and that means anxiety or depression or both. That's one of the reasons we crave chocolate when we're down – our body is telling us what it needs.

Now our most common source of zinc is red meat, so often vegetarians and vegans get low on zinc because they don't realize it's important and they can rely on grains for a lot of their calories. Zinc can be found in vegetarian sources such as nuts and seeds. Pumpkin seeds are our highest source of zinc so vegans in particular should eat daily pumpkin seeds as well as a variety of raw nuts. Zinc supplements need to be taken with Vitamin B6 to help it work, so look for vitamins containing both if you want to supplement your intake.

A trial giving zinc supplementation to children improved their cognitive skills, even in those without obvious zinc deficiency. So there would be a case for saying that daily zinc supplements, to ensure an optimum level of zinc, is of significant importance in maintaining correct brain function.

Zinc deficiency is also implicated in a number of other serious conditions, such as atherosclerosis, age-related macular degeneration, diabetes mellitus and Alzheimer's disease. From a cognitive point of view, there was a significant slowing of dementia symptoms in those

patients given zinc supplements. Increased copper levels seem to increase dementia symptoms and giving extra zinc has the double advantage of increasing zinc levels and decreasing copper. The balance between many substances, both macro- and micronutrients looks to be important in maintaining optimum function of the brain

There is even a suggestion that zinc supplements taken at the first sign of a common cold may shorten the course and decrease the severity of the symptoms, as zinc is also intimately bound up with the immune system. So zinc and vitamin C would be a good immune system booster in the autumn, if you get every cold and flu going.

Reading various websites such as "Better soils" from the agricultural bureau of South Australia, The Australian Bureau of Statistics, the Australian Department of Agriculture and Food and Soil Management Systems, the overall impression is that the Australian soil is severely lacking in zinc. It seems a reasonable assumption that significant areas of Australia are lacking zinc, which means that crops and animals grown on these lands may also be lacking in zinc.

1) *A potential role for zinc alterations in the pathogenesis of Alzheimer's disease.* *Biofactors. 2012 Mar-Apr;38(2):98-106. Lyubartseva G[1], Lovell MA*
2) *Copper excess, zinc deficiency, and cognition loss in Alzheimer's disease.* *Biofactors. 2012 Mar-Apr;38(2):107-13. Brewer GJ.*

3) *Discovery of human zinc deficiency: its impact on human health and disease.* *Adv Nutr. 2013 Mar 1;4(2):176-90. Prasad AS.*
4) *Oral zinc supplementation may improve cognitive function in schoolchildren.* *Biol Trace Elem Res. 2013 Oct;155(1):23-8. de Moura JE, de Moura EN, Alves CX, Vale SH, Dantas MM, Silva Ade A, Almeida Md, Leite LD, Brandão-Neto J.*
5) *Insight into zinc signaling from dietary zinc deficiency.* *Brain Res Rev. 2009 Dec 11;62(1):33-44. Takeda A[1], Tamano H.*

Magnesium

Magnesium plays a key role in many essential cellular processes such as DNA replication and repair, transporting potassium and calcium. It is involved in hundreds of body chemical processes and it has been suggested that lack of magnesium can make ADHD worse.

Magnesium is one of the most common minerals on earth and is what makes plants green (inside chlorophyll). We are surrounded by it and our ancestors probably ate considerable quantities every day. We don't store magnesium very well so we need to replenish it daily – hence the saying – 'Eat your greens every day.'

Dietary sources rich in magnesium are seeds and nuts such as almonds. The chocolate bean cacao contains the highest concentration of magnesium of any food. But if the bean is roasted during chocolate making then a lot of magnesium will be destroyed. So better to buy

raw chocolate – or even better make your own. The most important source of magnesium is of course green leafy vegetables. They're green because of the chlorophyll bursting with magnesium. So dig in every day and boost your brain power with salads, veggies soups and green juices. Cooking can destroy vitamins too so make sure some of your veggies are raw every day.

Many people's daily dietary intake of magnesium is frequently found to be below that recommended. Indeed, it is recognised that magnesium deficiency may lead to many disorders of the human body; it is believed to play an important role in the following; heart disease as well as diabetes mellitus, gastrointestinal tract disease, liver cirrhosis and diseases of the thyroid and parathyroid glands. Insufficient dietary intake of magnesium may also significantly affect the development and worsening of ADHD symptoms in children.

Increasing magnesium levels has improved learning and memory in rats. While magnesium supplements have a role, it's always best to get your building blocks from real food. When you eat fresh vegetables, not only are you getting valuable magnesium, you're also getting fibre and healthy flavonoids (more about them later). If you want to supplement further, then magnesium orotate tablets seem to give the best result. But Epsom salt baths are a good alternative and relaxing too.

Given that magnesium deficiency definitely leads to cognitive dysfunction, it would seem like good sense to make sure that your magnesium intake is adequate to keep blood levels high.

1) Magnesium: its role in nutrition and carcinogenesis. Rocz Panstw Zakl Hig. 2013;64(3):165-71. Blaszczyk U, Duda-Chodak A.
2) Magnesium deficiency and metabolic syndrome: stress and inflammation may reflect calcium activation. Magnes Res. 2010 Jun;23(2):73-80. Rayssiguier Y, Libako P, Nowacki W, Rock E.
3) Enhancement of learning and memory by elevating brain magnesium. Neuron. 2010 Jan 28;65(2):165-77. Slutsky I, Abumaria N, Wu LJ, Huang C, Zhang L, Li B, Zhao X, Govindarajan A, Zhao MG, Zhuo M, Tonegawa S, Liu G.

Iodine

As we mentioned before, the introduction of fish and seafood played a major role in the development of our large and complex brains. Apart from Omega 3, another important marine nutrient is iodine.

Iodine is necessary for good brain development in babies and also neurone function in adults. It is an essential nutrient for thyroid hormones which controls cell metabolism. Iodine deficiency in pregnancy leads to mental retardation and cretinism in babies.

Our main source of iodine is seafood and kelp. Other sources include dairy and eggs. Among people who eat little seafood, iodine deficiency can be quite common. Iodised salt is another way to increase your intake but seafood and kelp remain the most important sources.

1) *Effects of nutrients (in food) on the structure and function of the nervous system: update on dietary requirements for brain. Part 1: micronutrients. J Nutr Health Aging. 2006 Sep-Oct;10(5):377-85 Bourre JM.*
2) *The development of a global program for the elimination of brain damage due to iodine deficiency. Asia Pac J Clin Nutr. 2012;21(2):164-70. Hetzel BS.*
3) *Iodine and mental development of children 5 years old and under: a systematic review and meta-analysis. Nutrients. 2013 Apr 22;5(4):1384-416. Bougma K1, Aboud FE, Harding KB, Marquis GS.*

Iron

This is a very important nutrient for the brain as it is involved in brain development and the all-important myelin covering the axons. Iron deficiency in childhood can slow brain development and is the commonest nutrient deficiency in the world. Good sources are healthy organic red meat and other meats; spinach, broccoli and molasses are great for vegans and vegetarians.

Perinatal iron deficiency and neurocognitive development. *Front Hum Neurosci. 2013 Sep 23;7:585. Radlowski EC1, Johnson RW.*

Sulphur

Our bodies make their own anti-oxidants and our strongest one if glutathione which helps detoxify the brain cells. This chemical needs sulphur as one its components so vegetables high in sulphur are necessary for a good supply. Not surprisingly those constitute the brassica family, also known as cruciferous vegetables i.e. kale, cabbage, brussel sprouts, broccoli and cauliflower. When cooked the powerful smell is sulphur being released – a good reason for eating them raw.

Foods good for minerals	
Zinc	red meat, organic meat,
	pumpkin seeds, nuts
Magnesium	green leafy vegetables, raw cacao
Iodine	seafood, kelp, iodised salt
Iron	organic red meat, spinach, molasses
Sulphur	cruciferous vegetables

Fruit

Fruit is well known as being healthy to eat. It provides us with vitamin C which our bodies need and other anti-oxidants. Fruit can be high in fructose- more about that later. Fruit is also rich in flavonoids – helpful chemicals which are anti-inflammatory as well as anti-allergenic.

Flavonoids

Flavonoids are water soluble polyphenol molecules and are widely distributed in plants, fulfilling many functions.

Flavonoids are the most important plant pigments for flower coloration producing yellow or red/blue pigmentation in petals designed to attract pollinator animals. They also are responsible for most of the red/yellow colour of fruits and vegetables. They are the most common group of polyphenol compounds in the human diet. Studies show that

flavonoids also have anti-allergic, anti-inflammatory, anti-microbial, and anti-cancer activities.

Flavonoids are found in most plant material. The most important dietary sources are fruits and tea. Green and black tea contains about 25% flavonoids. Other important sources of flavonoids are apple (quercetin), citrus fruits (rutin and hesperidin).

Quercetin

This is an example of a flavonoid. Foods rich in quercetin include black and green tea, apple, onion, red grapes, tomato, broccoli, leafy green vegetables, raspberries, cranberry and prickly pear. It has anti-inflammatory properties and may assist in cancer prevention. Studies are not conclusive yet. It is well renowned for its anti-allergy properties.

Reservatrol

This is a natural phenol produced by several plants when attacked by bacteria or fungi. Found in the skin of red grapes and also small amounts in red wine. Research shows some anti-inflammatory and anti-diabetic effects, as well as cardio-protective and anti-viral effects. Anti-cancer properties have not yet been proven.

Flavonoids have antioxidant activity. Epidemiological studies have illustrated that heart disease is inversely related to flavonoid intake. Studies have shown that flavonoids prevent the oxidation of low-density lipoprotein thereby reducing the risk for the development of atherosclerosis. The contribution of flavonoids to the total antioxidant activity of components in food can be very high.

Red wine contains high levels of flavonoids, mainly quercetin and rutin. The high intake of red wine (and flavonoids) by the French might explain why they suffer less from coronary heart disease then other Europeans, although their consumption of cholesterol rich foods is higher (the French paradox). Many studies have confirmed that one or two glasses of red wine daily can protect against heart disease.

Tea flavonoids have many health benefits. Tea flavonoids reduce the oxidation of low-density lipoprotein, lowers the blood levels of cholesterol and triglycerides. Soy flavonoids can also reduce blood cholesterol and can help to prevent osteoporosis. Soy flavonoids are also used to ease menopausal symptoms. However the soy must be non-GM and should be organic to gain any benefits.

Herbs and Spices

Herbs and spices have been used for centuries to enhance the flavour and nutrition of foods in addition to supplying medicinal benefits. Adding herbs and spices to recipes can replace unhealthy ingredients such as sugary sauces and trans fats. Stir-fry dishes, marinades and dressings, vegetable dishes, casseroles and soups can be made more appetizing when prepared with herbs and spices, which increase food satisfaction and make us less likely to overeat.

Herbs are usually derived from the leaves of plants. Spices can come from the buds of the plant, such as cloves; the seeds, such as cumin; the berries, such as peppercorn; the bark, such as cinnamon; or the roots, such as ginger. Sometimes, the same plant can provide both herbs and spices, such as fresh coriander leaves as an herb and ground coriander seeds as a spice.

Herbs and spices provide important antioxidants to help fight damage caused by free radicals. Protective phytochemicals contained in both fresh and dried herbs and spices include allicin, in garlic, for potential anti-inflammatory and antimicrobial properties; curcumin, in turmeric, for helping to protect against cancer; gingerol, in ginger, to aid in pain relief and nausea; and capsaicin, in chili.

Common herbs and spices used in everyday cooking, such as black pepper, chili powder, ground ginger, cinnamon, cloves, basil, coriander and parsley, contain nutritious vitamins and minerals. Almost all spices and herbs provide calcium, iron, magnesium, phosphorus, potassium, sodium, zinc, copper, manganese and selenium, in addition to vitamins C, A, E and B as well as thiamin, riboflavin, niacin, pantothenic acid, B-6 and folate. Five basil leaves provide 3 percent of the recommended daily value for vitamin A; 1 tbsp. of crumbled bay leaf provides 4 percent DV for iron and 2 percent DV for vitamin A; 1 tbsp. of saffron provides 3 percent DV for vitamin C and 1 tsp. of oregano leaves provides 2 percent DV for calcium and iron.

Spices and herbs form the basis for a number of natural remedies. Garlic, cumin, fennel, coriander and mint have been used traditionally to help treat digestive disorders. Parsley seed extract has been used as a laxative. A review in the Medical Journal of Australia reports that spices and herbs provide a wide range of nutrients and phytochemicals which have health benefits and help prevent disease. Bio-active compounds in herbs and spices are associated with anti-carcinogenic properties, and some herbs may have an effect on psychological and cognitive function. Ginseng may have potential positive effects on glycaemia, and ginger may help for arthritic pain and treatment of nausea and vomiting. Half to one clove of garlic daily has anti-clotting

benefits and may have an effect on lowering cholesterol up to 9 percent in addition to reducing blood pressure by approximately 5.5 percent.

1) *6-Shogaol, an active constituent of ginger, attenuates neuroinflammation and cognitive deficits in animal models of dementia. Biochem Biophys Res Commun. 2014 May 2.Moon M, Kim HG, Choi JG, Oh H, Lee PK, Kang MS, Park Y, Huh Y, Oh MS.*
2) *Capsaicin ameliorates stress-induced Alzheimer's disease-like pathological and cognitive impairments in rats. J Alzheimers Dis. 2013 Jan 1;35(1):91-105. Jiang X, Jia LW, Li XH, Cheng XS, Xie JZ, Ma ZW, Xu WJ, Liu Y, Yao Y, Du LL, Zhou XW.*
3) *Epigenetic diet: impact on the epigenome and cancer. Epigenomics. Aug 1, 2011; 3(4): 503–518. Tabitha M Hardy1 and Trygve O Tollefsbol*

Healthy sources of flavonoids

Coloured fruits especially pink, purple and blue berries

Coloured vegetables – red, yellow and orange

Green leafy vegetables

Herbs

Coloured spices such as turmeric, ginger, chili,

Vegetables

This is the most important category. Everyone should be getting at least 5-9 portions of vegetables per day – which is quite hard to achieve with our modern lifestyle. There should be a good variety of different colours from red, orange, yellow and green.

Green vegetables are vitally important for magnesium, folate, fibre, vitamin C and calcium too. Green leafy vegetables should be eaten every day such as cabbage, broccoli, brussel sprouts, spinach, bok choi, silverbeet, collard greens. Lettuce nowadays often has very little nutrients, especially if it's grown on water, so we can't rely on it to be our only leafy green.

The best way to eat green leafies is raw in a salad or coleslaw. If you have a food processor, then coleslaw is quick and easy to do as well as veggie juices and smoothies. Cooking destroys green vegetables – cooking spinach for more than 60 seconds starts to destroy the vitamins.

Herbs are also a great source of nutrients and fresh herbs should be added daily to the diet rather than dried. The easiest way to add fresh herbs is to grow them yourself.

Alkalinisation of the body

There is very little research in this area to prove that an alkaline diet is useful for brain function. But it is generally accepted that when the body is more alkaline, its detoxification process works better.

Foods that make your body more alkaline are the healthy foods mentioned below such as healthy vegetables and fruit. Foods that make your body more acidic include sugar, meat, dairy, some medications and also stress. Green juices, lemon juice and apple cider vinegar are all excellent alkalizing foods.

Superfoods

Not all foods were created equal - some are so packed with vitamins, minerals, antioxidants, essential fatty acids and other beneficial substances that they've been deemed "superfoods".

Superfoods have incredible health benefits, packing a powerful nutritional punch that helps protect against cancer and heart disease, lower cholesterol, protect the organs from toxins and improve digestive health. Here are a list of superfoods that can supercharge a diet, others can be added but these are the most commonly considered superfoods.

Acai: This exotic berry from the Amazon has been the subject of intense hype, but there's a good reason why it's so trendy. Acai contains a remarkable concentration of antioxidants, amino acids and essential fatty acids, e.g. its high monounsaturated oleic acid content. Oleic acid helps omega-3 fish oils penetrate cell membranes, making them more supple.

Broccoli: This cruciferous vegetable is loaded with vitamin C, folic acid and carotenoids, which are packed with vitamin A and can protect your cells from the damage of free radicals and enhance immune system function. One of the sulphur containing vegetables that we need to

make our most powerful anti-oxidant – glutathione. Just one serving (1 medium stalk) provides 175 per cent of the recommended daily value of vitamin K, which helps build strong bones and plays an important role in blood clotting. Best eaten raw as even mild cooking can destroy nutrients.

Blueberries: Hidden within the juicy, deep blue-purple flesh of this tasty fruit is ellagic acid, an antioxidant. Blueberry extracts have also been shown to have anti-inflammatory properties and help prevent infectious bacteria from clinging to the walls of the gut, bladder and urethra.

Goji berries: They've been called the most nutritionally dense food on Earth, and they taste something like salty raisins. Lycium barbarum, commonly known as goji berries, contain more vitamin C than oranges, more beta carotene than carrots and more iron than steak. The dried Himalayan fruit is also a great source of B vitamins and antioxidants and contains 15 amino acids. Goji has been used medicinally in China for centuries to improve blood circulation, strengthen the limbs, improve eyesight, protect the liver, increase libido and boost immune function.

Kale: A dark, leafy green in the same vegetable family as broccoli and brussel sprouts, kale contains high amounts of beta carotene, iron and

folate. It's also a low-calorie, low-carb source of protein that's packed with fibre.

Spirulina: Spirulina contains rich vegetable protein (60-63 %, 3-4 times higher than fish or beef), multi vitamins (Vitamin B 12 is 3-4 times higher than animal liver), which is particularly lacking in a vegetarian diet. It contains a wide range of minerals (including Iron, Potassium, Magnesium, Sodium, Phosphorus, Calcium etc.), a high volume of Beta-carotene which protects cells (5 time more than carrots, 40 time more than spinach), high volumes of gamma-Linolenic acid. 100g of spirulina yields 25g protein. The flavonoid Phycocyanin can only be found in Spirulina.

Chlorella: Chlorella is another algae rich in nutrients and protein. Chlorella is a tiny, single-celled water-grown alga containing a nucleus and an enormous amount of readily available chlorophyll. It also contains protein (approximately 58 percent), carbohydrates, all of the B vitamins, vitamins C and E, amino acids, and rare trace minerals.

Gut health

We know that the brain has lots of endorphin receptors which respond to drugs like morphine and naturally produced endorphins (like those made during exercise). These chemicals can make you feel good but withdrawing from them feels terrible – that's why addiction sets in. We all know people who are addicted to exercise – it's the endorphin hit they get and the down moods they suffer when they withdraw from exercise that keeps them coming back for more.

But what's more important is that those endorphin receptors are not just in the brain. We've now realized that they occur in other parts of the body and high numbers are found in the gut. So when your gut is out of sorts, your brain can suffer too and your moods.

Your body is mostly bacteria.

Over 90% of the cells in our body are bacteria – on the skin, in our mouth and most importantly in our gut. We live in symbiotic harmony with these bacteria most of the time and only occasionally when one group gets out of control do we get an infection. This is why anti-bacterial wipes and soaps are such a waste of time and money. Just

cleaning your hands with soap is sufficient to remove any bad bacteria and leave the healthy skin bacteria intact. Our main aim should be to maintain the balance of good bacteria on our skins, in our mouths and nose and also most importantly in the gut.

Eating an unhealthy diet, drinking too much alcohol and eating sugar can wreck the balance of good bacteria in our gut. So you can reverse this effect by boosting your gut with new supplies of healthy bacteria- forcing the bad ones out of the picture.

You can do this in two ways – taking a regular pro-biotic or eating foods that have live pro-biotics in them. Be careful of processed foods that market themselves as having pro-biotics. Commercial yoghurts can have very few healthy lactobacilli and lots of added sugar and artificial sweeteners. Look for **biodynamically** active yoghurts- those with active growths of healthy bacteria and buy natural flavours and add your own fruit. That way you know what's in them and how much sugar etc.

Foods can be a great source of natural probiotics. Old-fashioned preserving methods such as fermenting food grow healthy lactobacilli and release healthy nutrients such as Vitamin C. These can be added to the diet as fermented vegetables, such as sauerkraut or home-made yoghurt such as kefir. Kimbucha is a fizzy fermented tea that is

brim full of healthy bacteria. Kimchi is a Korean version of fermented vegetables. These foods are very high in numerous probiotics, which help to ensure that the gut microbiome, or concentration of bacteria, is optimum. They are also easy to make at home or you can buy them at food markets and health food shops.

Healthy food sources of probiotics

Fermented foods such as sauerkraut and kimchi

Fermented drinks like kimbocha

Biodynamically active yoghurt

Kefir and other homemade yoghurts

WATER

Many, many people do not drink enough water throughout the day. The bare minimum for most people is 1 and a half litres just to maintain normal body processes. In a hot air-conditioned office, dehydration is more acute so the need to drink more water is imperative. Dehydrated brain cells can't work properly so thoughts and decision slow down. If you feel yourself falling asleep or feeling drowsy, check your fluid intake and have a large drink of water. Keep a glass or steel bottle by your drink and keep topping it up throughout the day. Aim to drink 3 litres per day on average. Coffee, tea and caffeine drinks dehydrate so replace each cup with a large drink of water. Green tea is a great choice as it's full of anti-oxidants too.

The Bottom Line

I hope we have shown you so far how healthy foods are a vital ingredient in getting great brain function. In the next chapter we will cover which foods to avoid and why. If you're feeling a bit overwhelmed with all the information covered so far, don't worry. In Chapter 6, I will show you how to put a healthy meal plan together to make it easy for you to put all this information to good use. So on now to Chapter 3.

Chapter 3

Foods That Inhibit Your Brain

When you want to maximize your brain performance, it’s hard to find the right advice. Browsing the scientific literature shows that there is a whole lot of information which hasn’t yet made it into the mainstream advice. So people asking what they should eat to optimise their brain’s and body’s performance are often in the dark or totally confused.

This chapter will focus on several areas where food can decrease brain function as well as showing you how environmental toxins can have an effect too. It’ll show you which foods to avoid and why.

Inflammation and oxidative stress

We now know that many diseases start with a process of inflammation. We constantly have small amounts of inflammation going on in our bodies all the time and that's a good thing. It keeps our immune system fit and ready for action. However when it gets out of control like a raging fire, chronic diseases like heart disease and early aging can be the result. Dementia, Alzheimer's and Parkinson's disease are all inflammatory processes in the brain.

Oxidative stress is the start of inflammation – the process of producing energy using oxygen produces inflammatory chemicals which gets out of hand. And this is where anti-oxidants come in. If we do not produce enough in our own body, then we need the added help of nature's anti-oxidants such as vitamin C. Our body's own strongest anti-oxidant, glutathione, needs sulphur as one of its constituents and this can be supplied by cruciferous vegetables. Anything such as a poison or chemical not occurring in nature can stimulate inflammation and make brain inflammation worse. In this chapter we mention some of the chemicals in food and our environment which can contribute to brain inflammation. The good news is there are simple things you can do to avoid these chemicals or right the wrongs with good nutrients.

Sugar

There is more and more evidence accumulating that the modern Western diet has multiple health effects on the body. The huge amounts of fructose being squeezed into processed foods has been shown to lead to insulin resistance. This can lead eventually to metabolic syndrome, with the development of type 2 diabetes mellitus and obesity.

Both of these diseases are associated with lower cognitive performance, cognitive decline and dementia. Intake of dietary fructose has also increased, with fructose accounting for 40% of the calorific sweetener in the USA, usually in the form of high fructose corn syrup (HFCS).

Fructose is sweeter than sucrose (table sugar), and it is therefore commonly used as a cheap sweetener. HFCS production began commercially in 1967. The concentration of fructose in corn syrup was increased to about 55%, and since then it has been added in vast quantities to all kinds of processed foods. The consumption of HFCS increased more than 1000% between 1970 and 1990, far exceeding the changes in intake of any other food or food group. Funnily enough, this coincides almost perfectly with the obesity epidemic over the last 30-40 years. It is estimated that nearly 7% of daily caloric

consumption in the U.S. is from HFCS. More concerning is the fact that at least 30% of children (1-5 years of age) consume soft drinks.

There is evidence that fructose itself has a direct effect on cognitive function, and that this is worsened by omega-3 fatty acid deficiency. Omega-3 added to the diet appears to reduce some of the bad effects of high dietary fructose, but not entirely. So the earlier advice about ensuring a lot of omega-3 in the diet would seem to be beneficial on several different levels, and that cutting down severely on sugars, and particularly fructose, will help to maintain and improve cognitive function.

There are also studies which show that diets high in sugar in general is associated with reduced cognitive function. A diet consisting of foods with a high glycaemic index led to reduced scores on a number of tests.

What about fructose in fruit?

Sucrose (table sugar) is a mixture of 2 sugars – glucose and fructose. Fructose composes around 45% of sucrose. As we know high fructose corn syrup is made by adding extra fructose to make it sweeter.

The problem is fructose is metabolized differently to glucose. Glucose is absorbed directly into the blood stream and used immediately for energy or stored as glycogen for later use. Fructose needs to go to the liver and its breakdown releases toxic chemicals much like alcohol. It doesn't switch off our appetite either so you can eat more fructose before you feel sick.

Now fruit has a mixture of different sugars one of which is fructose. However the fructose in fruit is absorbed along with vitamin C and other nutrients as well as fibre. The amount of fructose in fruit is less than most fizzy drinks and sweets. So eating 2 pieces of fruit per day should not exceed a healthy daily limit of around 25 g of fructose per day. The fruits highest in fructose are apples, pears and bananas. Fruit lower in fructose are berries and watermelon.

Sugar in general and fructose in particular are thought to be inflammatory chemicals which may have temporary effects on hampering brain function.

1) *Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity. Am J Clin Nutr. 2004 Apr;79(4):537-43. Bray GA1, Nielsen SJ, Popkin BM.*
2) *The emerging role of dietary fructose in obesity and cognitive decline. Nutr J. 2013 Aug 8;12:114. Lakhan SE, Kirchgessner A.*

3) *Cognitive and behavioural effects of sugar consumption in rodents. Appetite. 2014 May 6;80C:41-54.*

Calorie and carbohydrate restriction

When there is no carbohydrate, such as in times of starvation, the brain can use chemicals called ketone bodies as an alternate energy source- so called ketosis. Following calorie restriction or ketosis, there is notable improvement in cellular energy production especially in the brain.

There are numerous studies suggesting the use of ketogenic diets in the treatment of various neurological problems, such as Alzheimer's disease and epilepsy. The use of a ketogenic diet to treat epilepsy goes back to mediaeval times, but there is still only conjecture as to the underlying mechanism. Over and above the possible treatment of epilepsy, there is evidence that a ketogenic diet protects against other neuro-degenerative diseases. In this case, it would seem a good idea to limit obesity, and limit carbohydrate in particular. This would have at least two benefits; 1) to improve brain functioning in itself 2) to reduce the risk of diabetes and its negative effect on the brain.

While this dietary approach might sound extreme it illustrates the useful properties of limiting carbohydrate. Most western diets consists

of 70-80% carbs. So reducing your carbs to say less than 50% and even down to one third will have beneficial effects on the risk of diabetes and weight gain.

1) The neuroprotective properties of calorie restriction, the ketogenic diet, and ketone bodies. Brain Res Rev. 2009 Mar;59(2):293-315. Maalouf M, Rho JM, Mattson MP.
2) Antiepileptic popular ketogenic diet: emerging twists in an ancient story. Prog Neurobiol. 2005 Jan;75(1):1-28. Vamecq J, Vallée L, Lesage F, Gressens P, Stables JP.

Gluten

Gluten is an integral part of grains. It has been present since the first farmers cultivated grains and began milling it, leading to the first agriculture communities and allowing civilisation as we know it to develop. Having a nutritional source which could be harvested and stored over the long winter, allowed people who would otherwise have died of starvation to survive.

For thousands of years, grain helped to feed the world, and although archaeological evidence suggests that hunter-gatherers, living on a Paleolithic or caveman diet, were bigger and stronger than the new

generations of farmers, people in agricultural societies survived pretty well.

Then in the 1870s, the industrial steel roller mill was developed. This led to pure clean white flour, stripping out all the brown husk, however as one researcher in the 1970s said *"From a human nutrition standpoint, it is ironic that wheat milling methods to produce white flour eliminate those portions of the wheat kernel (bran, germ, shorts, and red dog mill streams) that are richest in proteins, vitamins, lipids and minerals."*

The second revolution occurred in the 1950s and 1960s when companies pioneered new, genetically modified, high-gluten species of semi-dwarf wheat. This bore little relation to the ancient and natural wheat species like Emmer and Einkorn.

Many people today suffer from IBS, (Irritable Bowel Syndrome) or gut problems. The common gut problems include bloating, gas and flatulence, diarrhea and constipation. A significant proportion of those people have gluten intolerance. The incidence of gluten intolerance seems to be increasing and may even be linked to the use of pesticides.

Gluten is a protein occurring in all grains. The particular gluten protein in wheat is called gliadin and more people seem to have a problem

with wheat gliadin than any of the other grains. True allergy to wheat gliadin is called coeliac disease and it appears to occur in around 1 in 100 people. Many of these people don't realize they have gluten allergy and suffer with continuous gut problems. But many more people feel they also have a problem with wheat gluten even when they don't have coeliac disease. This is because the levels of gluten is so high in modern wheat that many people react to it. In these cases their blood tests for Coeliac may be negative but they still feel rotten.

Gluten intolerance can cause many other general body problems, not just gut symptoms. These include, tiredness and fatigue, headaches, brain fog, joint pains and fibromyalgia. Depression is a common problem with wheat gluten but because there is a delay between eating the wheat and getting the symptoms, people don't recognise the cause. Wheat contains endorphins just like cannabinoids and these can give you a high. But when you reduce the wheat you get withdrawals – headaches, nausea and depression. Personality changes and even psychosis can result. Also included are migraine, carpal tunnel syndrome, inner ear dysfunction and seizures.

When you have gluten intolerance the small intestine becomes inflamed and can't work properly to absorb nutrients. So some people end up with zinc or vitamin B12 deficiency. This doesn't help cognitive

function at all. As you already know these two nutrients are vital to healthy brain functioning.

If you are in doubt about whether gluten is a problem for you, try to go strictly wheat-free for 1 month. This means no bread, cookies, muffins, pies, pastries and pasta. Also watch with sweets, candy and ice-cream as many contain sugar made from wheat. Processed and fast foods often contain wheat as a cheap filler. Beer is out, but a good quality distilled vodka may be ok in small quantities. If you are gluten intolerant your symptoms should improve. Then after 1 month do a wheat challenge. Eat lots of bread for 3 days. Observe how you feel for the next week. If your symptoms return, then it's almost certainly wheat that is the problem. Keep wheat out of your diet for about 6 months to allow your immune system to settle down and then see if you can tolerate small amounts of wheat. At this time it also helps to choose low-gluten types of wheat such as spelt.

1) *Gluten Sensitivity Presenting as a Neuropsychiatric Disorder. Gastroenterol Res Pract. 2014; Genuis SJ1, Lobo RA2.*
2) *Opioid receptor ligands derived from food proteins. Curr Pharm Des. 2003;9(16):1331-44. Teschemacher H.*
3) *Glyphosate, pathways to modern diseases II: Celiac sprue and gluten intolerance. Interdiscip Toxicol. 2013 Dec;6(4):159-184.Samsel, Seneff.*

Alcohol

There used to be a figure put around as a scare, that every time a person got drunk, the brain lost 1000 neurones. This has been shown to be untrue, but there is a lot of evidence that alcohol consumption is related to impaired cognition, and it seems to be dose related.

In men, there were no differences in cognitive decline among alcohol abstainers, quitters, and light or moderate alcohol drinkers. However, heavy alcohol consumption is linked with faster decline in all cognitive domains.

Dehydration associated with mild alcohol consumption has been shown to decrease performance in various tests of cognitive function, implying that being well hydrated will help to counteract the cognitive effects of alcohol.

Binge drinking is well known to lead to neurodegenerative change in the brain with progressive decreases in cognition. It has been shown that giving the omega-3 fatty acid, DHA, can slow or prevent these changes. It has been proposed that giving DHA to chronic alcoholics may lessen the toxic load on the brain.

Alcohol also has a deleterious effect on your decision-making process. Studies have shown that as your dose increases, there is a decline in

your ability to make the correct decision, but with much less effect on the speed with which you make that decision. This would obviously correlate with “Dutch courage”, where a drink gives you the confidence to go ahead with a particular course of action, even if that course is wrong.

Alcohol consumption has also to be considered the following morning- with the dreaded hangover. Research has compared performance in various psychological and physical functions. In some areas, the impairments during intoxication and hangover were of comparable magnitude. But performance on tasks of delayed recognition and reaction time was worse during hangover when compared with intoxication. The conclusion to draw is that from a business perspective, having one too many drinks the night before will affect your ability to make the correct decision the next day.

High alcohol intake is linked to vitamin B deficiencies, particularly thiamine (Vit B1) as well as Vitamin C. When alcohol is broken down in the liver, it releases toxic chemicals. This process causes inflammation which can be seen as puffiness which you might notice around your face and eyes for a few days after a big night out. Years of heavy drinking results in these toxins causing permanent damage to the liver.

The message from all the studies done on alcohol seems to be that long-term, high alcohol consumption will definitely have a bad effect on your brain function, and increase your chances of dementia. Acute intoxication will affect your decision-making processes in a negative way, and this may well extend to the following morning, so being pretty abstemious the night before an important meeting makes good sense. However the good news is that there are proven health benefits to small amounts of alcohol, as a glass of red wine contains flavonoids like quercetin which are anti-oxidant.

In business, one of the most common issues is using alcohol to de-stress. Now we all do this and I have many patients who say, *'I'll do anything but don't ask me to give up my glass of wine when I come home!'* I can put my hand up to this too. However, while a few beers after work appears to relax us, its effects are short-lived. Alcohol interferes with sleep quality, often causing people to wake during the night when its effects have worn off. The level of liver toxins and inflammation builds up. Depression and mood swings can result. Vitamin deficiencies get worse especially if you are not eating well either. A downward spiral of not sleeping well, drinking and not eating are classic results of a business in trouble. At the same time, decision making and ability to think decline. Not a good recipe to turn a

business around – you need a clear head and a well fed body to cope with the stresses and strains of running a business.

A good rule of thumb for watching your alcohol intake is 14 units per week for men and 7 per week for women. Try to get 2 alcohol free days per week – at the start of the week is good – to allow your liver to recover from the extra strain of the weekend. Dilute your wine with water or soda. Add fresh fruit to make a sangria. Rather than opening a bottle as soon as you get home, aim to treat yourself to a glass when dinner is over and the dishes are done. That way you'll consume less over a night. When you have a non-alcoholic drink make it special. Dress it up with a lemon slice and swizzle stick. Make it feel like you're treating yourself. And if you find yourself depending on alcohol too much, get help sooner rather than later. No business is worth making yourself ill over.

1) *Dose-related effects of alcohol on cognitive functioning. PLoS One. 2012;7(11):e50977. Dry MJ, Burns NR, Nettelbeck T, Farquharson AL, White JM.*
2) *Direct comparison of the cognitive effects of acute alcohol with the morning after a normal night's drinking. Hum Psychopharmacol. 2012 May;27(3):295-304. McKinney A, Coyle K, Verster J.*
3) *Alcohol consumption and cognitive decline in early old age. Neurology. 2014 Jan 28;82(4):332-9. Sabina S, Elbaz A, Britton A, Bell S, Dugravot A, Shipley M, Kivimaki M, Singh-Manoux A.*

4) *Neurocognitive and mood effects of alcohol in a naturalistic setting.* *Hum Psychopharmacol. 2012 Sep;27(5):514-6. Scholey AB, Benson S, Neale C, Owen L, Tiplady B.*

Coffee and caffeine drinks

Coffee is one of those foods that can be good, can be bad – it falls both sides of the fence. On the one hand it does contain some anti-oxidants, but on the other we can overdo it with too much. There is some evidence that caffeine enhances short term memory and cognition and possibly even have long term benefits in preventing Alzheimer's.

However relying on caffeine to keep us going can be a problem. Overwork and adrenal fatigue causes us to feel tired – it's hard to get out of bed in the morning so we start relying on coffee to get us going. Many business people I know have no breakfast and rely on several cups of coffee to keep going during the day. The problem is the caffeine is cumulative and can result in agitation and poor sleep. Not to mention the dehydration effect. So try to keep your coffee to one or two per day and none after 12 midday.

Caffeine drinks are notoriously full of chemicals such as colorings, flavourings, fructose and artificial sweeteners. So while you may be getting the benefits of caffeine to keep you alert, you're increasing your intake of artificial chemicals. Perhaps caffeine tablets might be a better way to go.

Current evidence for the use of coffee and caffeine to prevent age-related cognitive decline and Alzheimer's disease. Nutr Health Aging. 2014 Apr;18(4):383-92 Carman AJ[1], Dacks PA, Lane RF, Shineman DW, Fillit HM.

Trans fats

Although small amounts of trans fats are found naturally in the meat of ruminants like cows and human metabolism can deal with these, problems arise in the fact that industry learned to produce trans fats in vast quantities in the 1960s. At that time it was desirable to make margarine which remained soft and spreadable, even straight from the fridge. Another desirable quality is that trans fat don't go off as bacteria don't recognise them. So they have been used in many type of processed food such as baked goods, non-dairy creamers and salad dressings. However, the huge amounts found in processed foods are unable to be dealt with by humans. It is accepted that large amounts

of trans fats are associated with an increased risk of coronary artery disease, but it is less well understood whether trans fats have an effect on cognition.

It has been found that trans fats impair memory and learning in middle-age rats. These are the exact types of changes normally seen at the onset of Alzheimer's. It is obviously not sensible to translate results in rats to possible effects in humans, but it suggests that avoiding them would be a good idea, since few of them are found in nature. Your body has evolved over millions of years to metabolise the substances found in nature. It isn't surprising that it is no good at metabolising things which are entirely artificial. It is known that when the brain is short of DHA, it will use trans fats as an alternative.

High dietary consumption of trans fatty acids decreases brain docosahexaenoic acid but does not alter amyloid-beta and tau pathologies in the 3xTg-AD model of Alzheimer's disease. Neuroscience159 (1): 296–307. Phivilay A, Julien C, Tremblay C, Berthiaume L, Julien P, Giguere Y, Calon, F (2009).

Seed oils

As we talked about in the first chapter, the quality of oils is vitally important. Many oils sold for cooking are made from seeds such as

sunflower, safflower, canola or cottonseed. That means they are high in inflammatory Omega 6. On top of that they are produced in large quantities by highly processed industrial processes, using chemicals, pressure and heat. Unfortunately, many restaurants and fast food outlets use these oils in high levels and keep reusing them many times. This increases the trans fat levels. You only have to pass a fast food joint and smell the revolting cooked oil smell to know it's doing you no good. Try to reduce your reliance on fast food and use healthy oils for cooking at home.

Processed foods

Any food that has been prepared in advance and presented to you as a frozen or dried meal has a lot of preservatives and has had most of the nutrients destroyed by processing. Normally food decays pretty quickly – if you leave a piece of meat out of the fridge it will be rancid in a couple of days.

So how do supermarkets manage to supply food which might have to travel long distances and sit on shelves and in transporters for a long time? They process the food and add lots of preservatives. That way the food has a long sell-by-date and can sit on shelves for weeks or

months. That's not to mention the way the main ingredients are processed too.

Flour, meat and vegetable matter deteriorate quickly and can harbour pests. So pesticides and anti-fungals are added to reduce spoiling. Foods are also irradiated or stored in gas to last longer. So when you buy baked goods, pies, cookies etc. they are high in trans fat, salt and sugar with no useful nutrients.

As we have said before these kinds of foods provide no useful nutrition apart from a high level of empty calories. So your well designed 'Porsche' body gets a bunch of cheap low quality fuels which lower efficiency (you feel tired) and wear out your body quicker (you get disease).

Empty Calories

When we talk about empty calories, we mean food that has been so processed that the protein, vitamins and minerals have been destroyed. So while the food might contain a lot of calories in terms of fat and sugar there are no nutrients that our bodies can use to build muscle, repair damaged tissue or make hormones and brain chemicals.

If you have a high daily sugar intake from candy, sweets and chocolate these are also empty calories. They are high in calories and very low on nutrition so do no good to helping your body to work well.

Anything that is pre-cooked will be high in preservatives and may also have a lot of artificial flavourings and colours. Many children cannot tolerate these artificial chemicals and they can lead to behaviour problems like tantrums and poor sleep, ADHD and ADD.

Most of these processed foods are found on the central aisles of the supermarket, and a glance at the ingredients list is often informative. The longer the list, the less likely they are to be good for you.

Fast food

We all know that fast food is bad for us – too much trans fat, salt and sugar (especially in those up-sized drinks). A friend of mine went on a hike with her son. After the walk they both ditched their backpacks in the cloakroom and forgot about them. After about a month, the mother found the backpacks. In hers was a decayed and rotten apple, in her son’s a perfectly preserved hamburger – no deterioration at all. Now that should tell you something- it’s chock full of preservatives.

When you look at how mass-produced hamburgers and chicken are prepared – the meat is boiled until it has no flavour. Then artificial flavours, salt, texturisers etc. are added to get the consistent taste and texture people recognise.

At the same time fast food is very cheap – and some families can only afford to eat at these cheap places. But you have to ask yourself – how can they make the food so cheaply. Well, they use cheap ingredients. Foods that are cheap to grow and process, tend to be the high sugar/carbohydrate foods with little nutrients such as corn, wheat and soy. Don't be fooled by cheap salad ingredients either. Iceberg lettuce has one tenth of some of the nutrients than the darker leaf varieties like romaine lettuce. So a few shreds in a burger are not going to improve your health much, especially when doused with processed mayonnaise. If you're making a salad choose dark leafy greens like baby spinach – a great source of magnesium, vitamin C, calcium, folate, iron and zinc – in fact bursting with nutrients.

Pizza is very high in processed white flour and inflammatory fat depending on how it is cooked. Hot chips or French fries are high in carbs and inflammatory Omega 6 and have MSG in the chicken salt. This makes you thirsty and craving for more MSG. Many people are

intolerant of MSG and there is evidence that it can be harmful to your brain.

Be aware of where your food has come from and how long ago

Imagine a freshly picked flower. You know that as soon as that flower is picked it is starting to die. Within a few days, it is wilting and a week later you have to throw it away.

Plants and animals are living things, constantly exchanging nutrients with the environment to replace lost nutrients and repair damage. As soon as a plant is harvested or an animal killed, that exchange with nature stops. The nutrients that need to be upgraded over time are no longer available and the levels of nutrients start to decline. By prolonging the shelf life of fruit, vegetables and meat, food is available all year round. But by the time we get around to eating it often after months of storage, the level of nutrients may be very low. So the food fills us up but does not supply us with the nutrients we need.

We should be allowing food to develop to maturity naturally, so that its nutrients are at a maximum. Then pick and eat it as close to the time when it was living as possible. So start buying your fruit and veg at local farmers markets so that’s ripe and full of healthy nutrients.

Food Additives

You've probably heard that food additives and preservatives are bad for us, but if you're like most people, you only have a vague notion of what these substances are, what they are used for, and what foods contain them. We'll take a closer look at the problems associated with food additives and preservatives, and which ones in particular are especially harmful for our health.

What is a Food Additive?

A food additive is almost exactly what it sounds like: it is a substance that is added to food in order to preserve its flavour, enhance its taste, or improve its appearance. Simple, natural food additives include salt and vinegar, such as salting meats to preserve them or pickling peppers with vinegar.

However, starting in the second half of the 20th century, food additives became more complicated. Instead of natural additives that had been used for centuries, laboratories began creating synthetic additives – some an off-shoot of natural products, some completely

artificial. These new additives include food dyes and artificial sweeteners, along with a host of other additives and preservatives.

What is a Preservative?

A preservative is anything added to food to keep it from spoiling, becoming mouldy, or losing flavour. Other food additives are not technically preservatives, but nonetheless prevent foods from drying out, getting stale, or otherwise aging. These preservative-like additives include:

- Humectants – prevent foods from getting dry
- Glazing agents – give foods a shiny coating
- Colour retention agents – added to help a food keep its colour
- Emulsifiers – prevent water and oil from separating in mayonnaises, ice creams, homogenized milk, etc.

All these food additives and preservatives might not be so bad if we were consuming them in small quantities. However, our consumption of fast foods, frozen foods, and processed foods has increased exponentially since they were introduced in the 1950s and 1960s, and so too has our intake of food additives. Consider that in the late 1950s, the average person consumed about 11 mg of food dye per day. Today, the average person consumes six times that amount.

Food additives have been linked to hyperactivity in children as well as allergies and intolerances. A useful website to look at food additive problems is the WHO website

http://www.who.int/foodsafety/chem/en/

Which Food Additives have the most side-effects?

The following list details the additives, other than preservatives, that are the most likely to cause side-effects :

Food dyes

In the United Kingdom, six food dyes were recently banned due to a study that showed a strong correlation between the dyes and hyperactivity and other behaviour problems in children. Research funded by the Food Standards Agency (UK) has suggested that consumption of mixes of certain artificial food colours and the preservative sodium benzoate could be linked to increased hyperactivity in some children.

A European Union-wide mandatory warning must be put on any food and drink (except drinks with more than 1.2% alcohol) that contains

any of the six colours. The label must carry the warning 'may have an adverse effect on activity and attention in children'. All of these colourings are approved in Australia. Some such as Sunset Yellow and Tartrazine are consumed in high quantities by Australian children

1) *The Role of Histamine Degradation Gene Polymorphisms in Moderating the Effects of Food Additives on Children's ADHD Symptoms. Stephenson, J., Sonuga-Barke, E., McCann D., Grimshaw, K., Parker, K.M., Rose-Zerilli, M.J., Holloway, J.W. and Warner, J.O. (2010) American Journal of Psychiatry 167 1108-1115*
2) http://www.foodstandards.gov.au/science/monitoring/surveillance/documents/Colours%20Survey_Final%20Report%2022%20Oct%2008%20(2).pdf
3) http://www.food.gov.uk/policy-advice/additivesbranch/foodcolours/#.UxLtmPmSySo

Artificial sweeteners

Currently sucralose and aspartame are the big names, however there are significant concerns about their safety. In rats, sucralose alters the microbial composition of the gastrointestinal tract, with a relatively greater reduction in beneficial bacteria. Cooking with sucralose produces chemicals which are potentially toxic. Finally, both human and rodent studies have shown that sucralose can alter the levels of

glucose and insulin. No specific studies were done on cognitive function, but there were certainly some neurological effects noted, with problems in motion and balance.

With aspartame, it blocks the transport of important amino acids to the brain contributing to reduced levels of dopamine and serotonin. Aspartic acid at high concentrations is a toxin that causes hyper-excitability of neurones.

The bottom line is that there are worries about their safety and long term brain effects. Therefore you should minimize your intake of any artificial sweetener. Avoid drinks containing them and other low fat foods such as yoghurts.

1) *Sucralose, a synthetic organochlorine sweetener: overview of biological issues. J Toxicol Environ Health B Crit Rev. 2013;16(7):399-451. Schiffman SS, Rother KI.*
2) *Effects of aspartame metabolites on astrocytes and neurons. Folia Neuropathol. 2013;51(1):10-7.Rycerz K, Jaworska-Adamu JE.*

Heavy Metals

An increasingly important factor is the appearance of assorted toxins in food. Plants are sprayed with a toxic cocktail of herbicides, pesticides and fertilisers. Large amounts of these are incorporated into

the plants themselves. As most animals we eat also eat the vegetation/grass, the toxins are absorbed into the meat, in turn to be eaten by ourselves at the top of the food chain.

Exactly the same thing is happening in the oceans. Toxins are discharged in vast quantities into river water and the sea. These are absorbed by the tiny plankton. These are eaten by the smaller fish and so on to the apex predators such as tuna and swordfish, where the toxins are concentrated. Current medical advice is that we should eat significant amounts of oily fish, to supply our deficient omega-3 requirements. Unfortunately, the oily fish most recommended is tuna. These are turning out to have high concentrations of heavy metals like mercury and cadmium, courtesy of the chemical dumping. In Japan, whale and dolphin meat are still eaten. These are top predators, and analysis of meat sold in the normal markets has shown mercury levels 20 times higher than the accepted Japanese safe limits.

The most common heavy metals which we come into contact with are mercury, cadmium and aluminium. Mercury and cadmium contamination are a risk with fish and other marine food such as crustaceans, while aluminium is common in cooking pots and deodorants.

There is no doubt of the neurological effects we see in heavy metal toxicity. This toxicity stems from heavy industry polluting waterways and oceans, traffic pollution and air pollution. Smoking is another source. What we see is heavy metals accumulating in the brain over a long period of time and the body not being able to detoxify and get rid of these metals. This where a healthy diet can be the most benefit, helping your liver to detoxify and continually rid the body of harmful chemicals from food and the environment.

Mercury has many effects in the body, the most severe being death if the doses are high enough. Smaller doses are toxic to the brain and nervous system. Cadmium is equally toxic. It is often released into the atmosphere from industrial processes. In Japan, many people have been poisoned by eating rice grown in cadmium contaminated groundwater.

A further source of concern is airborne toxins, or ultrafine particulate matter (UFPM), a major part of which comes from traffic pollution. Some epidemiological studies on humans and controlled animal studies have shown that exposure to air pollution may lead to neurotoxicity. Some studies suggest that air pollution may lead to developmental

abnormalities, including autistic spectrum disorders. Further, it has been associated with an increased expression of neurodegenerative diseases.

1) *Neurotoxicants Are in the Air: Convergence of Human, Animal, and In VitroStudies on the Effects of Air Pollution on the Brain. Biomed Res Int. 2014. Costa LG, Cole TB, Coburn J, Chang YC, Dao K, Roque P.*
2) *The retention time of inorganic mercury in the brain--a systematic review of the evidence. Toxicol Appl Pharmacol. 2014 Feb 1;274(3):425-35. Rooney JP.*
3) *Disorders of heavy metals. Handb Clin Neurol. 2014;120:851-64.*

Medications that dull your brain

Many medications can affect your brain functioning. Check your drug information sheets for any brain effects. The best approach is to eat healthy so that you need to take the minimum dose and the minimum number of drugs.

The brain and statins

There is also recent evidence that the use of statins is linked to significant decline in cognitive function, as well as the risk of other side effects such as muscle pain and weakness, and diabetes. The brain

contains 25% of the body's cholesterol. Proper functioning of the brain depends on an intact myelin sheath, containing lots of cholesterol. Statins interfere with an enzyme called HMG co-reductase, which is an integral part of the pathway for cholesterol formation, as well as energy production. Recent reviews of research indicate that there is no significant evidence of loss of memory or brain power with anti-cholesterol drugs. However if you are concerned about memory loss and your medication, talk to your doctor to see if it's a factor.

1) *The controversies of statin therapy: weighing the evidence. J Am Coll Cardiol. 2012 Sep 4;60(10):875-81. Jukema JW[1], Cannon CP, de Craen AJ, Westendorp RG, Trompet S.*
2) *Statins and cognitive function: a systematic review. Ann Intern Med. 2013 Nov 19;159(10):688-97.Richardson K, Schoen M, French B, Umscheid CA, Mitchell MD, Arnold SE, Heidenreich PA, Rader DJ, deGoma EM.*
3) *Cholesterol and late-life cognitive decline. J Alzheimers Dis. 2012;30 Suppl 2:S147-62.*

Benzodiazepines and anti-anxiety pills

These medications are often are associated with decreased brain efficiency. They build up over time and dull the senses. They can be

related to behaviour disturbances and aggression and are quite addictive too.

Sleeping tablets while helping you get to sleep, reduce the quality of sleep and often create problems the next day. Decreased psychomotor skills such as driving are a problem as well as decision making and thinking. So don't rely on sleeping pills every night. Keep them for occasional use.

Party drugs

There's no need to explain this really, but if you are in any doubt that marijuana has long term permanent effects on memory and cognition then I suggest you attend your local drug clinic and see for yourself. Apart from addiction, cocaine and heroin both affect mood and thinking processes. They all induce, insomnia, paranoia and psychosis.

Chapter 4

Rest, relaxation and exercise

Stress

Stress of various kinds is something we all experience in life, to a greater or lesser extent. In business, we often have to make decisions in a hurry or under pressure. We don't always have the luxury of being able to sit back and think long and hard about the correct course of action. Some stress is good, because it keeps us on our toes, alert and sharp, ready to react in the best way to any given situation. However too much stress can lead to poor functioning and wrong decision

making. Any way of dealing with this, and keeping our brains working properly and efficiently, will give us an advantage.

While we can't always change the stressor but we can change the way we react to stress. Learning to control our emotions is a big plus in business as stress is a daily part of business life – whether it's from within the organization like staff problems or being bullied – or outside stress from competitors and banks.

How stress affects the brain

There is some evidence that under stressful circumstances, the reactions set off by a dangerous situation are very rapid, but may lack accuracy, and may also be set off by a harmless situation perceived as dangerous. In business, there may not be any real physical danger, but the possibility of losing a contract or even your business will be perceived by your brain as threatening. Decisions and thinking made under stress may be less rational and therefore less reliable. Removing stress or helping ourselves deal with it effectively could give us an edge in the business world.

The psychodynamic of panic attacks: a useful integration of psychoanalysis and neuroscience. Int J Psychoanal. 2004 Apr;85(Pt 2):311-36.De Masi F.

Ways to reduce your stress levels

Keep your friends and family

One of the simplest things we could do is to have a happy relationship with someone else. Recent experiments with piglets have shown that providing companionship significantly reduces stress levels. Now I know that these results apply to pigs, but it's a well-known fact that depression and suicide are far more common in individuals who have lost a partner. If these findings can be applied to humans, it would seem that any friendly companionship will help to reduce stress levels in humans, while a close relationship would seem to offer the greatest stress reduction. A happy and loved/loving person would appear to be a better functioning individual, with lower stress levels.

So don't neglect your friends and family and make time to spend relaxing with them.

Some recent research shows that resveratrol reverses the brain changes found in rats under stress. The effects appear to be the same as that performed by an antidepressant.

It has been demonstrated that people practising t'ai chi had better scores on mental state examinations, depression scales, memory tests and attention tests. There is some evidence that meditation increases brain efficiency in an attention task, possibly through improved sustained attention and impulse control.

1) *Social support attenuates the adverse consequences of social deprivation stress in domestic piglets.* Horm Behav. 2014 Jan 29. pii: S0018-506X(14)00008-7.Kanitz E, Hameister T, Tuchscherer M, Tuchscherer A, Puppe B.
2) *Resveratrol reverses the effects of chronic unpredictable mild stress on behavior, serum corticosterone levels and BDNF expression in rats.* Behav Brain Res. 2014 Feb 4. pii: S0166-4328(14)00053-9.Liu D, Xie K, Yang X, Gu J, Ge L, Wang X, Wang Z.
3) *Do older t'ai chi practitioners have better attention and memory function?* J Altern Complement Med. 2010 Dec;16(12):1259-64.Man DW, Tsang WW, Hui-Chan CW.

Meditation

When we are stressed our brain waves are speeded up and vibrate at a very short wavelength. This might keep us alert for a while but prolonged alertness causes a drop off in concentration and decision making. Most de-stressing activities aim to slow down the brain waves putting us into a more relaxed state.

It is difficult to find much work on whether meditation actually improves thinking directly, but at least one study suggests that it does. There were, however, many articles suggesting that meditation could very effectively reduce stress. Since stress has been shown to reduce the brain's capacity to function at its optimum, it would seem reasonable to suggest that stress reduction will at least help the brain to think more clearly. So rather than thinking better because you are meditating, the reduction in your stress levels due to the meditation allows you to think better.

1) *Meditation training increases brain efficiency in an attention task.* Neuroimage. 2012 Jan 2;59(1):745-9.Kozasa EH, Sato JR, Lacerda SS, Barreiros MA, Radvany J, Russell TA, Sanches LG, Mello LE, Amaro E Jr.
2) *Mindfulness-based therapy: a comprehensive meta-analysis.* Clin Psychol Rev. 2013 Aug;33(6):763-71.Khoury B, Lecomte T, Fortin G, Masse M, Therien P, Bouchard V, Chapleau MA, Paquin K, Hofmann SG.

3) *Yoga and meditation: helpful techniques to improve the life of cancer patients.* G Ital Med Lav Ergon. 2012 Apr-Jun;34(2 Suppl B):B7-

Candle Meditation

This is a very simple meditation which you can do anywhere and only takes a few minutes. Keep some tea lights at work or an aromatherapy candle. Light the candle and stare into the flames for a few minutes. The gentle flickering of the flame slows down brain waves.

Relaxation tapes

The downside is that meditation can take some practice, and business people often don't allow the time to learn. If you can't get yourself to relax, try using holosync tapes which will instantly put your brain into a slower wave activity which induces a calmer state. These tapes use bells and sounds which vibrate at slow frequencies, slowing the brain waves into relaxation mode.

Grounding

There may also be a case for “grounding”, where getting your bare feet in contact with the earth, can help to induce a feeling of wellbeing, and reduction of stress. A number of experiments have been done to assess the effects of being in contact with the Earth. This can be done by simply walking around barefoot on the bare earth or sand. Concrete or tar paths don’t allow proper electrical contact with the earth. It’s just like earthing your house. Apparently the best contact is on wet sand by the sea. Most people have at some time noted that after a walk by the sea, there’s a feeling of wellbeing, a pleasant tiredness, more than can be explained by the amount of exercise actually done. As we spend about one-third of our lives asleep, trials were done using conductive sheets or pads, in contact with the skin, and grounded either with a wire to the ground, or using the earth point of the house’s electricity system.

Most people reported an improvement on time getting to sleep, sleep quality, feelings of wellbeing on waking, and on various chronic aches and pains. These are all subjective and anecdotal, but objectively, there were changes in cortisol levels, thyroid hormones, various minerals in the body, and glucose. Blood viscosity also decreased, meaning blood was thinner, and less likely to clot.

No research has so far been done on cognitive function and grounding, but if it leads to improvements in all these measureable, objective parameters, then it isn't a big stretch of the imagination to think it can also lead to better, clearer thinking. Certainly worth a try, and various sheets, pads and patches can easily be bought on line, relatively cheaply. So why not make a barefoot walk in the sand part of your daily routine?

1) *The biologic effects of grounding the human body during sleep as measured by cortisol levels and subjective reporting of sleep, pain and stress.* The Journal of Alternative and Complementary Medicine. November 2004, 10(5): 767-776.Maurice Ghaly and Dale Teplitz.
2) *Earthing: health implications of reconnecting the human body to the Earth's surface electrons.* J Environ Public Health 2012;2012:291541. Chevalier G, Sinatra ST, Oschman JL, Sokal K, Sokal P.
3) *Can electrons act as antioxidants? A review and commentary.* *J Altern Complement Med. 2007 Nov;13(9):955-67. Oschman JL.*

Take time off

A work colleague of mine said she felt that time doing nothing was wasted. She always wanted to be doing something and felt guilty if she wasn't occupied.

I'm sure many of you can relate to that but unfortunately doing nothing has a very important function. You see our brains are like computers and occasionally we need to defragment them. Relaxation gives your brain a chance to recover and store facts and memories in the right place.

We know now in sport that the body needs time to recover and grow muscle. In fact the rest days are nearly more important than the exercise days. And it's the same with our brains. Those days when you go to the beach and unwind are vitally important to let your brain relax and embed new learning and memories. Many small business owners work 7 days a week. Now you can do that for a certain length of time but many people end up in my clinic with adrenal fatigue. Our bodies and brains are not designed to work continuously without a break. No wonder people die of exhaustion in Japan. Karoushi (or death from overwork) is a common phenomenon in Japan where people work too hard for too long and die prematurely of a heart attack.

So when you put your feet up in front of a good movie, read a book or take the kids to the park – you <u>are</u> working. You're working on refreshing your brain for the next week of work. Make a point to schedule in date nights, kid's trips, weekends away and treat them as seriously as a board meeting. Your brain will be more efficient at work, your thinking will be clearer and decisions come more easily.

The Healing Power of Sleep

It has long been known that sleep deprivation and obesity are associated with neurocognitive dysfunction. Some recent research has shown that improving quality and quantity of sleep leads to improvement in brain function.

Sleep deprivation is strongly involved in stressing the brain, and conversely, stress is a cause of sleep disturbances. Sleep disturbance, either too much or too little, is so common in depression that it is part of the diagnosis. There is evidence that sleep deprivation following brain injury compromises axonal sprouting and delays recovery. Since stress and sleep deprivation are obviously connected, dealing with both of them will lead to improvement in performance

Work is going on to see how different stresses affect brain function and how sleep deprivation makes things worse. The message is that adequate amounts of sleep are needed to allow the brain to work properly, and if you are under a lot of stress, then lack of sleep will make things worse.

The amount of sleep needed by any person seems to be up for argument. There are some who say that 9-10 hours per night is best, and others who swear that 4-5 hours is all that is needed.

There is a trial that measured cognitive function in short sleepers (less than 5 hours), long sleepers (more than 9 hours) and a reference group who slept 6-8 hours. There was no difference in cognitive function between the short sleepers and the reference group, but a significant decline in the long sleepers.

This may indicate that there is an optimum amount of sleep for each person, and as long as you get that amount, your brain will function properly. Another way of looking at it is that the long sleepers may be more sluggish metabolically, possibly having an underactive thyroid, or some manifestation of another deficiency, leading to chronic tiredness and the need to have more sleep. However, the underlying message is that adequate sleep is important for optimum functioning, without necessarily saying what that amount of sleep is, for any given person.

Another recent piece of research showed that grammar acquisition improved significantly when subjects had adequate sleep. Without going into it too deeply, this is a high level function and involves serious brain work. The trial showed that there was an improvement in

one aspect of the two components of the task. These findings suggested again that sufficient sleep is very necessary for complicated brain function, and is needed to keep your brain ticking over efficiently, and to optimize performance

Insomnia

To look at this from the opposite side, a meta-analysis of trials in 2013 highlighted the importance of insomnia as a cause of cognitive dysfunction, a risk factor for development of other medical and psychological disorders, and increased healthcare costs. In other words, if you don't get enough sleep, you get sick, you can't think properly and you stand a good chance of developing other illnesses. Quantitative reviews show the benefit of treating insomnia by cognitive behavioural therapy. This just means that good results have been obtained without the use of sleeping tablets. Sleeping tablets and alcohol may help you get over to sleep but the quality will be reduced and you spend less time in refreshing REM sleep.

A further study found that 24 hours of sleep deprivation led to significantly poorer performance in various simple tasks and tests, the implication being that your ability to do your job properly is adversely

affected by being sleep-deprived. This would obviously have detrimental effects on your business.

Sleep deprivation studies are often carried out on doctors, well known for regularly missing out on sleep. The performance of orthopaedic surgeons was tested, comparing those who had less than 4 hours of sleep the night before testing, with those sleeping longer. The sleep-deprived performed significantly worse on a variety of tests. Another trial compared junior hospital doctors who took a 20-minute midday nap with those who stayed awake. The performance of the non-nappers stayed the same throughout the day, while the nappers improved after their sleep. It's quite obvious that your grandpa's falling asleep in the chair for a short nap isn't due to approaching senility, but to a hard-won realisation that a doze at any time will have beneficial effects.

The overall message is that sleep deprivation isn't good for you. If you bounce out of bed in the morning, and are more or less ready to go immediately, you are probably getting enough sleep for <u>you</u>, even if it isn't enough for the guy next door. However if you have trouble getting out of bed and always feel tired, you may be suffering from lack of sleep. Experiment with getting longer sleep during weeknights and resting more on the weekend. You may get a surprise how much your thinking power has improved with more rest.

1) *Sleep extension improves neurocognitive functions in chronically sleep-deprived obese individuals.* PLoS One. 2014 Jan 15;9(1):e84832.Lucassen EA, Piaggi P, Dsurney J, de Jonge L, Zhao XC, Mattingly MS, Ramer A, Gershengorn J, Csako G, Cizza G; Sleep Extension Study Group.
2) *Sleep and protein synthesis-dependent synaptic plasticity: impacts of sleep loss and stress.* Front Behav Neurosci. 2014 Jan 21;7:224. eCollection 2013.Grønli J, Soulé J, Bramham CR.
3) *Cognitive decline in short and long sleepers: a prospective population-based study (NEDICES). J Psychiatr Res. 2013 Dec;47(12):1998-2003.Benito-León J, Louis ED, Bermejo-Pareja F.*
4) *Sleep promotes the extraction of grammatical rules* PLoS One. 2013 Jun 5;8(6):e65046. doi:Jensen O, Petersson KM.
5) *Insomnia.* JAMA. 2013 Feb 20;309(7):706-16.Buysse DJ.
6) *Psychomotor performance of medical students: effect of 24 hours of sleep deprivation.* Indian J Psychol Med. 2012 Apr;34(2):129-32.Dixit A, Thawani R, Goyal A, Vaney N.
7) *Does sleep deprivation impair orthopaedic surgeons' cognitive and psychomotor performance?* J Bone Joint Surg Am. 2012 Nov 7;94(21):1975-81O'Brien MJ, O'Toole RV, Newell MZ, Lydecker AD, Nascone J, Sciadini M, Pollak A, Turen C, Eglseder WA.
8) *The effects of a mid-day nap on the neurocognitive performance of first-year medical residents: a controlled interventional pilot study.* Acad Med. 2012 Oct;87(10):1428-33. Amin MM, Graber M, Ahmad K, Manta D, Hossain S, Belisova Z, Cheney W, Gold MS, Gold AR.

Exercise

While good nutrition and adequate sleep are obvious steps towards a better brain, exercise and physical activity are also beneficial.

Physical exercise has lots of benefits for many aspects of cognitive functioning and has a huge effect on general mental health. The benefits of exercise seem to be most pronounced on learning, preservation of brain function, and on executive function, which is good for business.

In a group of young adults, divided into 3 sections doing low, moderate and high levels of physical activity, the moderate activity group performed significantly better at mental function tests than those having low levels. Those doing high amount of exercise actually performed slightly better than the moderate ones, but the differences weren't statistically significant.

An interesting study compared subjects' ability to learn related to the timing after exercise, and the type of exercise, namely high impact anaerobic sprinting, low impact aerobic running, or a period of rest. It found that peoples' vocabulary learning was 20% faster after the intense exercise. This type of exercise was also related to strong

increases in various brain chemicals, which seem to be the reason for the improved learning.

Cognitive impairment has been associated with obesity for a long time. A recent study with patients undergoing lap band surgery, showed that giving these patients a moderate amount of physical activity led to improved brain function. Interestingly, increasing the amount of exercise didn't lead to further improvements, so moderate exercise is best.

There seems to be plenty of evidence in trials that exercise is good for your brain function, with the most benefits from regular moderate physical activity. There is also the possibility that immediately following intense exercise may be the best time to increase your learning ability, by as much as 20%.

The bottom line is to make exercise a regular part of your day and don't allow yourself to put other activities higher on your priority list. Exercise is a must to clear your head and allow yourself to think more clearly. It doesn't have to be a hard session at the gym but a brisk walk or a swim is just as good.

1) *Twelve-week physical and leisure activity programme improved cognitive function in community-dwelling elderly subjects: a randomized controlled trial.* Psychogeriatrics. 2014

Feb 16.Kamegaya T, Araki Y, Kigure H; Long-Term-Care Prevention Team of Maebashi City, Yamaguchi H.

2) *Physical Activity and Cognitive Function in Bariatric Surgery Candidates.* Int J Neurosci. 2014 Feb 18. Galioto R, King WC, Bond DS, Spitznagel MB, Strain G, Devlin M, Cohen Phd R, Crosby RD, Mitchell JE, Gunstad J.

3) *Psychomotor speed in young adults with different level of physical activity.* Med Arh. 2010;64(3):139-43.Pluncevic-Gligoroska J, Manchevska S, Bozhinovska L.

4) *High impact running improves learning.* Neurobiol Learn Mem. 2007 May;87(4):597-609.Winter B, Breitenstein C, Mooren FC, Voelker K, Fobker M, Lechtermann A, Krueger K, Fromme A, Korsukewitz C, Floel A, Knecht S.

Chapter 5

The Brain Boosting Meal Plan

So you've read all about which foods are great for your brain and those that are not so good. Now we're going to put it all together in a healthy eating plan that is easy to follow and simple to do.

In the previous chapters I've shown you the rationale behind the healthy nutrients you need to be sourcing for your brain and what foods you need to avoid. Below you will find a summary of the healthy foods you require to get all the nutrients you need plus a 7 day meal

plan. This meal plan gives you a good idea of what your eating habits should be over the week. So let's summarise what we know about the main food groups.

Vegetables

What can I say about vegetables? They are definitely the way to go for healthy living - at least 5 portions per day or more if you can manage it.

That's why I've put them at the top of the list. They are so vital to our health and most people don't get enough of them. True there are some cultures where they don't eat any vegetables – for example the Inuit in Canada, but they consume the whole animal – all the organs, bones etc. so that they get all of the nutrients the animal has in its body.

Unfortunately we don't do that. We only eat the muscle protein mostly these days – we've become very fussy and don't eat the internal organs like liver, kidney, lungs and heart like we use to –(although I am very partial to the occasional haggis). So we only get a limited amount of nutrients from meat.

Therefore if you are going to eat a mixed diet you need to eat plenty of vegetables to get all the nutrients. It makes sense doesn't it? Many of my patients only eat vegetables at one meal – so it's difficult to get 5-9 portions in at dinnertime. The easiest way is to think of vegetables at each meal. Always have a salad or vegetables with lunch. And include vegetables at breakfast time rather than fruit. With fruit you get a burst of sugar at the start of the day which keeps your blood sugar see-sawing up and down all day as well as craving more carbs. So have an omelet with spinach tomato and onion. Or boiled eggs with a tasty chopped salad. Think of vegetarian snacks too. Bring veggie sticks to work and dip into tasty humus.

All in all, vegetables are such a great source of minerals and vitamins, fibre and flavonoids that they just can't be missed out. It's not possible to oversell this.

Remember:

Green leafies for magnesium, flavonoids, vitamin C
Cruciferous veggies for sulphur
Coloured vegetables for flavonoids

Get as many types and colours into your diet as possible. Variety is the key here. Now cooking can destroy some vitamins and minerals, so try

to have your vegetables raw as much as possible. You only need to cook spinach for 90 seconds to start denaturing those vital B vitamins and folate. So make sure you have at least one raw salad per day. The perfect diet would be 50% raw but if you can't manage that then just aim for one salad per day.

No time to cook?

Many people complain they have no time to cook especially after a busy day at work. I say – grab a chop, salmon fillet or organic steak and lightly grill – roughly slice a quarter of a cabbage onto a side-plate. Chop an onion, tomato into a bowl. Tear a few lettuce leaves or spinach and add to the bowl. Add any other veggies you have available –carrots, cauliflower, mushrooms, pepper, broccoli etc. – can all be eaten raw. Throw them together in the bowl, drizzle over some olive oil and balsamic vinegar, add half an avocado and you have dinner in less than 15 minutes.

Meat

This should always be organic. Beef should be grass-fed and chicken should be free-range. It's difficult to find healthy organic pork, but if you do find a local supplier then pork can be a tasty alternative on a weekly menu.

Fish

Try to source wild fish rather than farmed as they are mostly fed on grain – not their natural diet. Tuna and swordfish can have high mercury levels, so best to give these fish a miss. Source locally caught wild fish.

Nuts

Organic again is a must as well as raw. Nuts have many healthy vitamins and minerals, which can be destroyed by roasting. So raw almonds, walnuts, brazil nuts etc. are a great source of protein, oils and nutrients.

Seeds

Seeds can be a useful source of protein, oils and vitamins – but they can cause some inflammation in vulnerable people. A few sunflower or pumpkin seeds per day should be OK for most people.

Legumes and beans

Cashews fall into this group as they are not a true nut. But lentils, chick peas and beans are a great source of vegetarian protein. Peanuts also fall into this group but they should only be an occasional food due to their high levels of the inflammatory fat arachadonic acid. They also can have a toxin called aflatoxin when they get mouldy, so give peanuts or groundnuts a miss.

Herbs

Remember, herbs are a great source of flavonoids – those nutrients which help us fight infections and inflammation.

Add herbs to your salads, in fact grow your own herbs in the kitchen – that way they'll always be available. Don't rely on dried herbs which

have been sitting in the back of your cupboard for the last 5 years. Throw them out and start again with a little kitchen herb garden.

Parsley, basil, oregano, rosemary, dill – these all give great flavour and aromas to your food and your kitchen.

Spices

Again spices are full of very useful nutrients and flavonoids. They don't need to be hot, but they can give your food, rich, deep flavours.

Add turmeric for curcumin
Garlic for allin
Add chili – for capsicain
Cinnamon, cardamom and nutmeg are great spices for flavour

Fruit

Bursting with vitamin C, fibre and flavonoids, fruit should be a regular part of any healthy diet. Some fruit is higher in fructose than others but if you stick to 2 pieces per day, you should not exceed a healthy level of fructose. Fruit low in fructose include berries and watermelon. Apples pears and bananas are relatively high. Of course berries give

you the greatest bang for your buck, as they are bursting with vitamin C, flavonoids and are low GI as well.

Vegetarians and Vegans

Many of my patients are vegans and can maintain a healthy diet with a bit of planning and care. However some people struggle to get enough nutrients especially vitamin B12 which is quite difficult to access if you never eat any animal products. Most vegans need to supplement vitamin B12.

But other nutrients such as zinc and iodine are just as important for good brain function too. These minerals tend to be forgotten about but they are essential for the brain. I've seen too many people suffering from anxiety and depression to not realise just how important zinc is.

Don't wait until this happens to you – make sure you eat nuts and seeds high in zinc such as pumpkin seeds and almonds on a regular basis and if in doubt add a zinc and iodine supplement.

Invest in your future now

Putting some time into your eating plan will reap untold benefits later on. It's like having an insurance policy – you put a little bit of extra time and money into eating healthy now and save yourself a fortune later on. Doctor's bills, tests and X-rays, medications – the cost adds up and you know what – it's totally unnecessary!

I don't intend to be taking any pills when I'm older – I'm going to be fit, healthy and active right up til I'm a hundred and even beyond. Jeanne Louise Calment lived until she was 122 and was riding her bicycle until over 100 years old. Her mental state was in tip-top form right til the end. She swore by olive oil which she ate with every meal her whole life and rubbed it into her skin. Now I'm not suggesting that we all live til we're a hundred but wouldn't it be great to be healthy with amazing brain power and contributing to society until well past retirement age?

If you're reading this book and under 30, you're probably imagining that you'll never reach that age and don't even want to. But let me remind you that what you eat now on a day-to-day basis can either feed your brain or hold it back. Who knows how much money you're

leaving on the table because you're missing 'the big idea' or you keep forgetting appointments or people's names. Get onto it today…

Don't procrastinate

Our biggest stumbling block in business, as I'm sure you know is procrastination. Being paralysed by indecision is a pretty common occurrence. What's happening when we go through that process?

First of all we think of all the pros and cons – what bad things will happen if I do this? What good can come of it? What are the long term consequences? Will it help my career? Will I make more money?

Then we look at how quickly the consequences occur. If I resign this job now, I lose my income pretty quickly. If I spend this money on marketing I may not get it back in sales. And so we do nothing paralysed by fear of immediate consequences makes us often take the less risky option.

It's the same with healthy eating, especially if we are trying to lose weight. We're standing at the counter staring at a chocolate muffin and thinking '*Will I be good today and avoid the lure of the chocolate*

treat when the benefits are a long way off – maybe 4 weeks before I see any results – or will I just eat it now and get the pleasure of the sugar rush straight away?' Guess who wins most of the time. Nine times out of ten we take the easy way out and go for immediate gratification. And oh well, we'll start tomorrow.

But if you had it planned so that you still had tasty and healthy choices, so it wasn't the chocolate muffin or nothing, but a healthy chocolate treat or a savoury one? Then it would be much easier to come down in favour of the healthy option every time. Believe me, there are healthy chocolate options. With just a bit of planning once a week, you can have a healthy eating plan, that keeps you feeling full and satisfied, that doesn't take too long to prepare and also won't break the bank. Sure organic food is a bit more expensive but once you taste the difference you won't want to go back to flavourless supermarket produce. Eating will become a joy and a pleasure to make.

Where are mother's little helpers?

I'm often surprised that people in families still cook dinner alone. Or even worse, don't cook dinner at all. I have a number of business women patients who after a hard day's work still come home and cook dinner for the family while everyone else sits around on the computer or in front of the TV.

Cooking food as a couple is great fun and can be very sensuous – so get cooking together- you never know where it might lead… If you've got kids get them cooking too. Kids are more likely to eat healthy if they know how to make healthy snacks and meals. And they also appreciate a proper meal when they know what hard work goes into preparing it. Don't just be a slave to your family – teach them how to help you in the kitchen– its great fun and good family bonding time.

If you're single, get organised with friends to take turns cooking healthy meals, recipes and snacks. You don't always have to eat to together, it could be something that could be frozen or kept at work. Spend a rainy Sunday afternoon planning with friends to share out shopping, cooking, meal planning and recipe finding. A problem shared is a problem halved. Community gardens are springing up all over the

place, they're a great place to meet new friends and share the workload of growing your own vegetables.

But enough of the lecturing already… now it's time for the 7 day meal plan to get you started on the healthy eating that's going to blast your brain into orbit…

The Seven Day Brain Boosting Meal Plan

	Breakfast	**Snack**	**Lunch**	**Snack**	**Dinner**
Monday	Berry smoothie	Handful almonds, brazils and walnuts + goji berries	Avocado + salad	Piece fruit Mixed nuts	Steak + veggies
Tuesday	2 eggs any style	Handful macadamia nuts	Chicken + salad	Piece fruit Mixed nuts	Veggie + lentil curry
Wednesday	Quinoa porridge	Handful almonds, brazils and walnuts	Fish + salad	Piece fruit Mixed nuts	Chicken and pumpkin + veggies
Thursday	Berry smoothie	Handful macadamia nuts + goji berries	Avocado + salad	Piece fruit Mixed nuts	Lamb chop + cabbage
Friday	2 eggs any style	Handful almonds, brazils and walnuts	Chicken + salad	Piece fruit Mixed nuts	Steak + veggies
Saturday	Quinoa porridge	Handful macadamia nuts	Fish + salad	Piece fruit	Veggie curry
Sunday	2 egg omelet with onion, tomato and mushroom	Handful cashews + goji berries	Prawns + salad	Piece fruit Mixed nuts	Chicken and pumpkin + veggies

Fluids

1) Drink water at every opportunity.
2) 1 cup coffee per day – either black or with a splash of milk
3) Add other drinks like herbal teas, black tea, fruit teas
4) Freshly squeezed juices either at home or at a juice bar. Make sure there is no sugar added. Many juice bars add sorbets or nectar which are mostly sugar. So get a mixed veggie and fruit juice rather than a smoothie.

Berry smoothie recipe

Ingredients

Handful frozen or fresh berries

½ packet spinach

1 banana

300mls water

25g pea protein powder

15mls flaxseed oil

Method

Pour all ingredients into blender. Add more water to smoothen consistency. Pour into 500ml cup and drink. Don't worry about the colour, this tastes delicious with the berries and is such a great start to the day

Supplements

Krill oil or high quality fish oil or flaxseed oil. Make sure you take it every day either 3000mg in total or at least 450mg DHA. You can add the liquid oil to your smoothie or porridge or take the capsules.

If you feel you need extra zinc, then get a zinc supplement too. But make sure it contains vitamin B6 which you need to assimilate the zinc.

Salad Dressings

Use fresh salad dressings rather than supermarket ones. If you buy a salad at work, keep a bottle of olive oil and some balsamic vinegar at

your desk and add your own dressing. Many restaurants buy dressings in bulk which contain cheap oils and trans fats.

Going forward

This is a very simple eating plan to show you how easy it is to change your diet and still eat plenty of good and tasty food. Ideally every food that you buy should be organic. It's a great investment in your health for the long term to buy organic fruit and veggies. But if you really feel you can't afford it at least buy organic meat and organic-free range chicken.

If you've ever seen video of how chickens are raised, you'll know what awful conditions they are raised in. So rather than buy into that system, support farmers who look after their chickens in a more humane way –make it an ethical choice rather than cost. It's better for the chickens and its way better for you too.

The Brain Boosting Detox program

Now that you've got all the knowledge and some idea of how to eat, you may want to take it further and join our 30 day online detox program.

We will be sending you the link to that program shortly after you receive this book. I would highly recommend this program. Here's why….

6 Fantastic Reasons to

Detox your Body and Brain right now

1) Get rid of all the toxins your body has been accumulating over the years
2) Help your liver get into tip top shape so it detoxifies your body efficiently from now on
3) Detox your brain from chemical residues accumulating after years of the wrong food
4) Clear your head for clearer thinking and decision making
5) Give your brain all the nutrients it needs to make those neurotransmitters
6) Give your brain extra nutrients to help it grow and learn new skills and information

Well now I know you are convinced you need to make those changes. And the Food Coach Institute will be there to help you each step of the way.

I hope you have enjoyed reading this ebook and getting all the information you need to help your brain go supersonic.

I'm passionate about getting the right information across to people – knowledge is power and now you are empowered to take control of your own health. It gives me very great pleasure to see clients go out

smiling knowing that they have the power and the know-how to change themselves and the world.

You know how to change your world and I congratulate you on taking this step to power up your brain. Your business or your career will thank you a thousand times over

Best regards

Dr Shirley

Dr Shirley Mcilvenny, MD

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