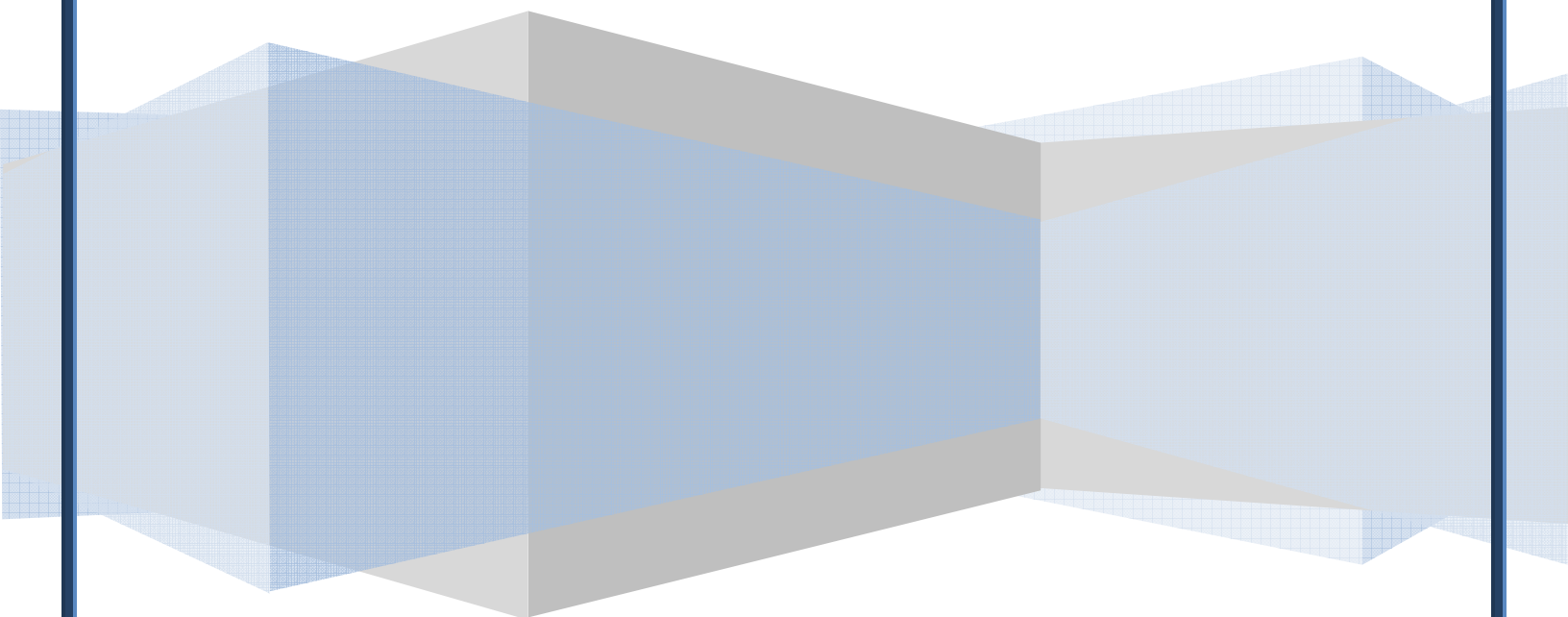


BOOSTING MEMORY AND COGNITIVE PERFORMANCE

By Dr. Michael Elstein



Cognitive decline is not an inevitable consequence of ageing. You don't have to lose your memory or your capacity to think clearly and function effectively. However, whether you become a victim of the degenerative diseases of ageing or discover that your capacity to remember is slowly being eroded depends in part on your commitment to your mental wellbeing. If you find that your memory is not what it used to be and you don't have the clarity of thought that you would like, then you can embark on a programme of cognitive renewal. Your brain is a very plastic organ with a remarkable capacity for regeneration and rejuvenation. This is scientifically documented in my e-book [Eternal Health](#). To discover how you can optimise your mind power you need to understand two major factors:

1. What boosts your brain power
2. What causes your brain to degenerate

Your brain is your most vital organ. Contrary to Woody Allen's assertion that it's only your second most important cognitive apparatus, without your mind you become a mere shadow of your former self. Think what would become of your life if you were slowly and relentlessly stripped of your faculties until you regressed to an infantile, dependent state deprived of the ability to interact in any meaningful adult way with your social and physical environment. There are 12 million known Alzheimer's sufferers in the world today. Your chances of succumbing to this devastating affliction are one in ten by the time you reach the age of 65. This increases by five percent every five years so that by the time you reach your 80's the likelihood that you will contract Alzheimer's disease escalates quite substantially to 30 percent or a one in three possibility. We have yet to discover a cure for Alzheimer's and although research is currently being conducted at a frenetic pace mental decline is an inevitable reality for sufferers of this disease.

This is why when you notice that your memory is deteriorating one of the first questions that you will probably want answered is, are you getting Alzheimer's? Although doctors will reassure you that a certain amount of memory loss is consistent with the ageing process and that you only need to be concerned if forgetting is a consistent pattern of your life, the bottom line is that we still can't be sure just who is destined

to be the unfortunate one. There is a condition called **Mild Cognitive Impairment**, which means that your memory and mental function is slightly diminished relative to what's expected for your age. From this state you progress to Age Related Cognitive Decline when you don't actually have dementia but you're not far away. In other words there's not that much space between that which is viewed as normal and the slippery slope which takes you on the relentless journey into mental impoverishment. What you really need to do is embark on a programme that may protect you from getting dementia and all the other degenerative brain disorders that occur with ageing. This is the good news. You don't have to be an illness statistic. There are a number of natural remedies that have the potential to improve your memory and mental performance while providing you with added fortification against the diseases of ageing.

The brain is easily the organ that is most vulnerable to all the insults that accumulate as the body ages. To understand how natural medicines can protect you it is important to describe all those processes that contribute to the decline in mental function and the progression of brain degeneration.

1. Free-Radicals

These are chemical toxins, which materialise as an inevitable consequence of our reliance on oxygen to generate energy. Free-radicals can be immensely destructive little critters and as we get older our bodies become increasingly susceptible to the devastation that these metabolic time bombs can create. Our brain cells operate at the mercy of free-radicals for two main reasons. Firstly 20% of the energy that our body consumes is utilised by the brain. The more we use oxygen the more we generate free-radicals. Within each cell is a tiny structure called the mitochondrion where energy is produced. While these miniature batteries go about their daily activity sustaining us, millions of free-radicals are conceived hell bent on destroying the very tissue that created them. Secondly the brain is rich in fatty tissue and fat goes rancid very easily. Diseases such as Parkinson's, Alzheimer's, AIDS dementia, epilepsy and stroke are all thought to have one unifying factor. Free-radical events either cause or drive these pathological conditions. Therefore if we want to

preserve our higher faculties it is critical that we have at our disposal a healthy supply of those substances that have the power to nullify the effects of free-radicals.

2. Inflammation

This process takes place when our immune systems are activated to deal with an impending threat. Food allergies, foreign bacteria, viruses and parasites are some of the triggers that ignite our immune systems. Abnormal protein deposits such as that which occur with Alzheimer's disease and fats that have become oxidised or attacked by free-radicals are further initiators of this inflammatory process. Inflammation serves a protective purpose if it takes place over a short period of time. Prolonged persistent inflammation is destructive however and this unremitting inferno is thought to result in brains, which are simply burnt out. In laboratory animals the production of inflammatory cells is associated with brain dysfunction and learning deficits⁽¹⁾. The problem is that you won't know your brain cells are slowly dying until it's too late. Interestingly, anti-inflammatory medication has recently been initiated to prevent Alzheimer's disease. Neutralising the effects of inflammation should be your second priority if you want to preserve the integrity of your brain cells.

3. Nutrition

Our brains cannot survive without essential nutrients. Deprive a brain cell of oxygen and it will die. Provide insufficient nutrition and functional decline is inevitable. B vitamins are especially important not only to provide fuel and insulation for the nerve cells of the brain but also for the synthesis of neurotransmitters. These are the chemicals, which facilitate communication between cells thereby cementing learning and memory. When cells cease to communicate brains functionally die. There is every indication that as we age our capacity to digest and absorb principle nutrients deteriorates. This may result in premature mental senescence.

Optimal nutrition is one of the keys to preserving brain function.

4. Homocysteine

This is a protein, which can be damaging to the lining of your blood vessels if your levels are elevated. A number of studies now suggest that raised levels of homocysteine are associated with Alzheimer's disease, stroke and Parkinson's. This protein has been identified as an early predictor of mental impairment, which provides a window of opportunity for appropriate intervention⁽²⁾. The latest scientific evidence indicates that homocysteine has a predilection for the cells of the hippocampus, that part of the brain, which is responsible for the formation of memory. What appears to be derailed is mitochondrial function leading to cell death⁽³⁾. Eliminating the destructive power of homocysteine protects your mitochondria, which is the vital energy source for your cells.

5. Circulation

Because our brains are dependent on an uninterrupted supply of oxygen any decrease in circulation dramatically affects cerebral function. There is some evidence that the microcirculation of the brain is reduced with ageing⁽⁴⁾. Free-radical disease is thought to be the primary instigator. Atherosclerosis, which is the progressive blockage of blood vessels, is known to escalate as we get older. Ensuring adequate circulation may prevent brain ageing.

6. Stress

There is clear evidence that stress, which is unresolved and constant impairs learning and memory⁽⁵⁾. The part of the brain most affected by ongoing stress is the hippocampus where memory traces are consolidated. Prolonged stress has even been associated with Alzheimer's disease. Managing stress with the appropriate measures may prevent cognitive decline.

In summary these are the factors we need to address in order to maximise our higher powers while avoiding the dreaded diseases of ageing:

1. Free –radicals
2. Inflammation
3. Inadequate nutrition
4. Homocysteine
5. Poor circulation
6. Stress

Natural remedies are now available to deal with these factors while enhancing your cognitive ability.

Alpha-lipoic acid

Antioxidants are those nutrients, which combat free-radicals. Alpha-lipoic acid is considered to be an ideal antioxidant as it has a diverse array of talents. It can quench free-radicals, preserve the mitochondria, exist inside and outside the cell, recycle other antioxidants, reduce heavy metal toxicity, protect brain cells from harmful chemical poisons, safeguard the cerebral microcirculation and limit the harmful effects of inflammation. Finding another antioxidant with similar capabilities would be quite an achievement.

Alpha-lipoic acid scavenges a numerous assortment of free-radicals including hypochlorous acid, nitric oxide, peroxyxynitrite, hydrogen peroxide and singlet oxygen, all considered to be highly toxic to brain cells especially the mitochondria where energy is produced. Aside from shielding the mitochondria from these damaging chemicals alpha-lipoic acid also enhances energy production, which promotes normal brain function. The most profound contribution that alpha-lipoic has to make is its recycling of other important antioxidants. Vitamin C, vitamin E, coenzyme Q 10 and glutathione, which is considered to be a key brain and liver antioxidant, are all regenerated by alpha-lipoic acid. Antioxidants perform best when they operate

synergistically and by providing this ongoing pool of protective nutrients alpha-lipoic acid oversees the defensive fortress that preserves our brain cells.

Metals such as iron, mercury, lead and cadmium have all been implicated in neurodegenerative disorders such as Parkinson's and Alzheimer's disease. Alpha lipoic acid has been noted to chelate or remove these metals and has been proposed as a possible therapy for these conditions both as a treatment and a preventive strategy.

Research work performed in Israel has indeed confirmed that thiol containing compounds including glutathione and alpha-lipoic acid are highly effective as neuroprotective agents⁽⁶⁾.

Recent experimental evidence demonstrates that alpha-lipoic acid protects brain cells from injury caused by neurotoxins, lack of oxygen and poor blood supply⁽⁷⁾. Glutamate induced damage to nerve cells is markedly diminished due to the neuroprotective effects of alpha-lipoic acid⁽⁸⁾. In aged rats the accumulation of lipid peroxidation in the brain, which is essentially fats that have gone rancid is reduced by the administration of alpha-lipoic acid. The authors point out that this is partly due to the increase in vitamins C, E and glutathione all of which are regenerated by alpha-lipoic acid.

Nuclear factor-kappa B, a potent pro-inflammatory agent is also inactivated by alpha-lipoic acid, which is a further testament to this nutrient's protective powers. Remember inflammation is one of the processes which is extremely harmful to brain cells if it proceeds unabated.

Aged mice receiving alpha-lipoic acid exhibit improved performance in an open field memory test. In fact after the first 24 hrs older animals receiving the treatment performed better than the younger animals.

Alpha-lipoic acid has also been used to treat the following:

- Type 1 and type 2 diabetes including insulin resistance
- Diabetic neuropathy
- Retinopathy
- Glaucoma
- Cataracts

- Liver disease
- HIV infection
- Irradiation injury

Gingko Biloba

Gingko biloba is the oldest surviving deciduous tree on earth with a history dating back 240 million years to the Mesozoic age. Like alpha-lipoic acid gingko is an extremely versatile nutrient with the ability to improve learning memory and mental performance. Clinical evidence indicates that gingko can be used for the following:

- Alzheimer's dementia
- Tinnitus
- Vertigo
- Dizziness
- Reduced cerebral blood flow
- Stroke
- Transient ischaemic attacks
- Poor peripheral circulation
- The prevention of blood clots
- Raynaud's disease
- Diabetic vascular disease
- Irregular heart rhythms
- Cochlear deafness
- Asthma
- Macular degeneration

- Erectile dysfunction

Gingko is a powerful antioxidant and circulatory stimulant widely acknowledged for its ability to enhance circulation to the brain. By protecting red blood cells and dilating small capillaries gingko ensures the safe passage of oxygen to your brain cells, thereby facilitating enhanced mental functioning. Gingko is also noted to be an anti-inflammatory herb with the ability to reduce stress, relieve anxiety and improve glucose utilisation in the brain.

With regard to Alzheimer's dementia and stroke sufferers Gingko can improve cognitive function, speech capacity, mood and social functioning. Gingko is particularly effective in treating the syndrome known as cerebral insufficiency, which is characterised by compromised blood supply to the brain. Features of this syndrome include difficulties in concentration and memory, absent-mindedness, confusion, lack of energy, tiredness, depression, anxiety, dizziness, tinnitus and headaches. Equally non-demented patients with age-related memory impairment demonstrate improved short-term memory and mental speed after commencing gingko.

Gingko reduces plasma fibrinogen and blood viscosity, two significant risk factors for heart disease. Gingko also improves cognitive performance in healthy young people. Evidence shows that gingko can improve memory, speed of mental processing, attention, concentration and planning ability.

Bacopa Monniera (Brahmi)

Bacopa has been an important part of the Ayurvedic tradition since the sixth century A.D. It has been used to improve memory and concentration and to facilitate learning. Bacopa is a potent antioxidant with the ability to stimulate new protein synthesis in areas of the brain responsible for long-term memory.

In experiments performed on laboratory animals bacopa has been shown to improve the speed at which new tasks are learned as well as enhance the retention of these new behaviours. In 1990 a clinical trial performed on adult patients with anxiety neurosis revealed that concentration and memory were improved after a four

week course of bacopa. Other symptoms that were ameliorated included nervousness, insomnia, anxiety and irritability⁽⁹⁾.

Bacopa can also be beneficial when given to schoolchildren as evidenced by a single-blind trial performed in India during which maze learning, reaction times and immediate memory were all improved.

In a small study bacopa reduced the incidence of epileptic fits while in five cases the onset of fitting was completely eliminated over a five month period.

By reducing stress and anxiety bacopa makes it easier to think clearly and perform mentally and is useful for those individuals who find themselves in highly demanding work and study environments.

Vinca Minor

This herb has been used to treat the following conditions:

- Stroke
- Cerebral insufficiency
- Vertigo
- Tinnitus
- Dizziness associated with Meniere's disease
- Epilepsy
- High blood pressure

Vinca Minor improves cerebral blood flow, increases the rate at which the brain produces energy and speeds up the use of glucose and oxygen in the brain.

Although research performed on vinca minor is limited experimental evidence from trials utilising a synthetic derivative of this herb indicates that significant cognitive improvements can be derived with regard to learning and memory.

Withania Somnifera (Ashwaganda)

Withania is an Ayurvedic herb that has been used for the following indications:

- Tiredness
- Nervous debility due to stress
- Impotence
- Premature ageing

This herb is viewed as an adaptogen, which means it reduces the effects of stress. Treatment with withania prevented the manifestation of stress in those animals that were immobilized in the laboratory situation. This has been further substantiated in other animal studies⁽¹⁰⁾. Reducing the harmful debilitating effects of stress should be an important component of your brain preservation strategy.

Withania is an antioxidant with documented ability to boost those enzymes that are protective to the brain⁽¹¹⁾. This has been put forward as the possible reason for withania's antistress, cognitive-enhancing and anti-ageing effects.

The effect of withania on ageing has been studied in 101 healthy male subjects. Compared to the placebo group withania caused an increase in red cell count, increased seated stature, reduced cholesterol, improved sexual performance and reduced hair greying⁽¹²⁾.

With regard to Alzheimer's disease withania may have a significant contribution to make as an enhancer of the neurotransmitter acetylcholine, which improves memory.

Centella Asiatica (gotu kola)

Centella is considered to be of value in the treatment of tiredness, loss of memory, stress, depression and Parkinson's disease. It is regarded as a herb that reduces fatigue while improving energy and wellbeing.

Research suggests that centella can be regarded as a reasonable candidate for the treatment of Alzheimer's disease by virtue of its protective effects against the neurotoxicity of beta-amyloid which is the protein widely regarded as the primary promoter of Alzheimer's.

Vitamin B12

Vitamin B12 deficiency is alarmingly common in the older population and in vegetarians. When we age our capacity to absorb this vital nutrient diminishes and some statistics indicate that 40% of those folk over the age of 65 have sub-optimal levels of vitamin B12. Vegetarians are at risk as the only non-animal sources of B12 are some types of seaweed and fermented foods such as tempeh.

Vitamin B12 is important for the synthesis of neurotransmitters such as acetylcholine, which is important for learning and memory, and serotonin, which prevents depression. Melatonin one of the key brain hormones also needs vitamin B12 for its synthesis. The accumulation of harmful levels of homocysteine is prevented in part by adequate levels of vitamin B12. The fatty sheaths that surround and protect nerve endings are maintained by this vitamin.

B12 deficiency develops insidiously over years ultimately leading to memory deficits, loss of balance, mood disturbances and finally dementia and psychosis. In a British study older people with abnormally low levels of vitamin B12 were more apt to develop Alzheimer's disease. The link is thought to be due to high levels of homocysteine.

Ensuring adequate B12 levels is considered to be a cornerstone of mental health and effective cognitive function.

Folic acid

This is another essential brain nutrient and current evidence suggests that deficiency of folic acid is just as widespread as that of vitamin B12. Folic acid is necessary for the production of energy and the formation of red blood cells. Deficiencies of folic acid lead to fatigue, apathy, depression, memory problems and anaemia. Supplements of folic acid can reverse depression and memory loss.

High levels of folic acid can reduce some of the damage that occurs in Alzheimer's sufferers.

Along with vitamin B12 having a ready supply of folic acid goes a long way to preserving your higher faculties.

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