



MEMORY REPAIR PROTOCOL

**Science Backed Method For
The Treatment And Prevention of
Alzheimer's And Dementia**

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Disclaimer: Memory Repair Protocol

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Introduction: **What is 'normal'** **Ageing?**



Science has been attempting for decades to understand and differentiate between 'normal ageing' and 'abnormal ageing'. In particular, scientists have wanted to define precisely which changes in brain function are a part of natural healthy ageing and which are abnormal pathological changes. Mainstream scientific models at present view Dementia and Alzheimer's disease as natural side effects of the ageing process, whilst the most common view globally amongst most people, scientific or not, is that ageing - the process of getting older - naturally *causes* changes in the brain and central nervous system that lead to conditions such as memory loss and dementia.

These perceptions of ageing leave us and our elders with little to look forward to later in life. It's not that surprising that depression statistics amongst the elderly population are high when ageing is expected by almost everyone to cause irreversible brain damage. Brain damage that must initially lead to forgetfulness and erratically odd behaviour and later, to unavoidably and inexorably strip your very identity away from you just before you die an idiot's death without any dignity.



There is a general bias towards youth on our planet, with the aged being looked down upon and in some cases neglected for their 'deteriorations'. All the emphasis these days is on the youth – young people appear in most adverts; young people get all the jobs because the elderly are not 'capable' after retiring age, whilst the retiring age itself is getting younger and younger each generation. Old people in modern '1st world' affluent western countries are increasingly put into 'specialised care' – a sort of humane and sanitised prison for the elderly.

The global community has seemingly 'pathologised' ageing and the subject is... 'dirty', 'frightening' and awkward – it is one of the greatest modern taboos of our time.

It appears that there is a fine line when it comes to distinguishing normal age-related changes from pathological changes. With the global view on ageing being what it is, there is an urgent need, now more than ever, to challenge long held assumptions about age and health. We really need to make sure that we have the story correct; we need to make sure that our assumptions are not leading us further down an inhumane youth-obsessed future path.

This is one of the aims of this book – to call into question the established popular view of ageing and the concepts of 'natural' 'inevitable decline'. Our other aims for this book are to present clearly the full story of ageing and the brain along with the latest scientific findings so that you, the reader may be better informed overall on this topic. Finally, our aim in producing this book is to try to provide some explanation for why degeneration is so prevalent and, more importantly, what YOU can do about it.

There is hope on the horizon for our beloved elders because over the last decade, an increasing body of evidence from new research seems to show that brain degeneration is neither inevitable nor a natural outcome of ageing.



So, does this mean that the 'mainstream' scientific view of ageing, dementia and Alzheimer's disease is flawed?

The science underlying brain function has only gathered serious momentum in the last three decades and this is particularly true for the physical factors affecting old age. In fact, when it comes to brain degeneration, we are still mostly in the dark about the underlying causes as to why it happens. Brain functioning is still not completely understood and new research is constantly causing revisions or refutations in our old hypotheses and cherished dogma - at present in this field, any consensus as to what's really going on is increasingly difficult to justify.


Recent imaging technologies have opened up the brain to researchers so that for the first time the brain is able to be studied 'in situ' as a living system. We are able to see more of how it functions and in particular, we are able to see to what extent lifestyle, environmental factors and nutrition contribute to rapid bodily decline in ageing.

The last decade has also brought an explosion of genetic information to the table and our beliefs, attitudes and even definitions of ageing are being challenged as a result. Researchers are now finding scientific evidence that there are factors which can actually enhance brain function and optimise cognitive functions in our youth and aged alike.

What has been clearly demonstrated is that informed diets, lifestyle changes and environmental factors have an impact on our entire bodies throughout our lives, with the brain being no exception. The point is well illustrated, if a little ironically, by the fact that neurology students back in the 1990's were saying that, "chronic lifestyle disease may soon become an archaic relic associated with ignorant assumptions made by twentieth century scientists".

A new understanding is emerging. What we once thought was 'destined', 'unavoidable' or 'inevitable' may in fact be unnatural or even unnecessary. These discoveries are beginning to form a new health paradigm, one that centres on lifestyle and dietary changes for sustained all-round health and longevity - A paradigm that seeks to auspiciously redesign how we relate to and treat the elderly amongst us.

In line with this new paradigm we developed a pharmaceutical-free diet and lifestyle plan - complete with recipes and advice based on the latest scientific research



findings to prevent, halt, or combat degenerating conditions such as Alzheimer's disease or dementia that commonly arise for many people as they get older.

It is our hope that this book serves in supporting this healthy, affirming and elderly-friendly paradigm by informing you of the facts and equipping you with powerful lifestyle and dietary tools to combat what seems to be an unnatural deterioration of the brain and its functioning as we age.



Chapter 1: Brain Degeneration

What is it

In this section we look at the normal factors of ageing – in particular changes in brain anatomy and function that occur naturally as we get older. Following this, we will briefly review neuro-degenerative diseases (diseases that involve the



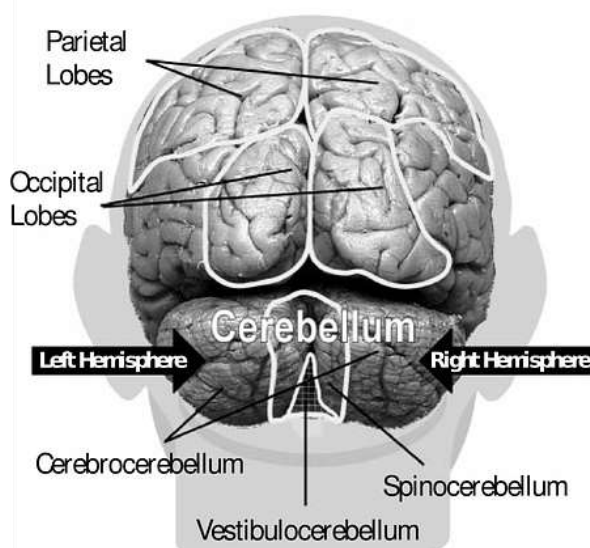
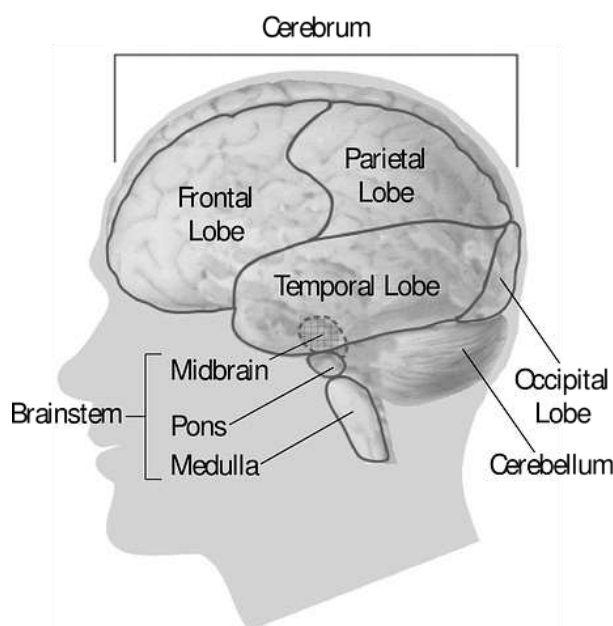
degeneration of nerves – particularly in the brain) with a particular emphasis on dementia and Alzheimer's disease. Armed with a basic understanding of natural ageing and abnormal disease we will be adequately equipped to explore the implications of the latest research applied to preventing and managing degenerative disorders.

Age is still considered as the largest risk factor associated with brain degeneration. Past research has shown differences, in structure, function and general properties of our brains as we age. These contribute to psychological, mental and physical changes commonly reported by our elderly. These findings are supported by recent researchⁱ indicating that changes related to gene switches may provide an explanation for the changes observed in our brains as we age.

Basic Anatomy of the Brain

Our brains are made up of two basic types of nervous tissue – grey matter, consisting of nerve cells in the cortex (the outermost layer of the brain – the surface layer) and white matter, consisting of fat rich myelin-sheathed axons (literally 'arms', of white nerve cells) that connect nerve cells from the cortex to other areas in the body and brainⁱⁱ.

The brain also contains chambers, hollows deep inside it called ventricles. These ventricles are not vacuum but are instead filled with cerebrospinal fluid (CSF). It is thought. The main functions of the ventricles in the brain are to create and circulate



the CSF, to provide nutrients and chemical stability to the brain and to create buoyancy to protect the brain from impact against the skull.

The brain cortex is the outermost grey layer of the brain and houses the grey matter. The main functions of the cortex are extremely diverse and varied but we can say that all the functions are higher function such as voluntary movement, planning, speech and language processing etc.

The hippocampus is a structure in the brain that is heavily involved in memory. Impairment of hippocampal functioning always affects memory, both the recall of



established memory and the creation of new memories - concomitantly our ability to learn will also suffer impairment if the hippocampus is impaired.

The amygdala is an important structure in the brain responsible for aspects of memory, decision making and emotional reactions. Impairment in this structure can have severe effects on our moods, volatility and aggressive or impulsive behaviour.

Natural Structural Changes in the brain as we age

What CT & MRI Scans Reveal

It has only been in the last 2 – 3 decades with advances in scientific technology that we have been able to image the living brain with Computer-aided Tomography (CT) and Magnetic Resonance Imaging (MRI) scans. This has allowed us to rapidly advance our knowledge of how the brain develops and functions. The following changes in brain structure have been seen during ageing:

The brain ventricles expand in size as we age (Ventriculomegaly)ⁱⁱⁱ - CT Scan

The brain decreases in size/volume^{iv} (MRI)

Brain shrinks in different areas at different rates over time – some studies^v indicate that brain shrinkage occurs at a rate of 1% per annum as we age

Neuroplasticity and Ageing


Our brains can adapt and respond to our environments by appropriately changing its structure and function. This fantastic ability is called neuro or brain plasticity^{vi}. Our ability to learn how to play a musical instrument, for example, relies on the brain's ability to grow neurons into linked interconnected chains called 'neuro-nets'. Neuro-nets are established through the repetitions of daily practice^{vii}. The brain actually changes shape as you learn.



Research has found that as we get older our brain's capacity to be neuro-plastic seems to decrease. Neuro plasticity allows us to learn and grow, as well as lay down new memories^{viii}! However, things are not so clear because further research has also shown that people in their seventies are still quite capable of learning and developing new neuro-nets to play a musical instrument. So age, per se, was not the reason behind the decline in neuroplasticity.



Researchers have found that 'calcification' interferes with neuroplasticity - in particular changes in our body's ability to regulate calcium (calcium regulation) seems to affect neuro plasticity negatively. Scientists have theorized that an inefficiency in the regulation of calcium causes decreased firing of our nerve cells, which limits the ability of the brain to respond to signals from the environment^{ix}. The end result of less nerves firing off is decreased brain plasticity because the brain would be slow to respond or to nerve impulses that normally signal to moderate change. In other



words, if you can't fire your brain's nerves properly, you will think more sluggishly with less information being conveyed, and therefore less likelihood of the constructed of well-connected neuro nets.

The Hippocampus And Ageing

Memory involves the hippocampus, a seahorse shaped part that sits in the lower center of the brain. Aside from the functions of the hippocampus mentioned earlier, it is also associated with emotions and the autonomic nervous system (the nervous system responsible for unconscious bodily functions). Some scientists have claimed that nerve cells in the hippocampal region undergo changes as we age. This biochemical alteration is thought to result from enzyme dysfunction, faulty chemical messaging and genetic switches. Such changes lead to memory loss and cognitive decline – the symptoms we seem to observe in our elderly. Importantly, these scientists are now saying that brain degeneration is due to biochemical changes and not actually due to nerve cell death, as was previously believed^x.

“Only a couple of decades ago it was believed that brain cells could not regenerate, but now this absurd idea is no longer taught by most medical schools. Instead, current consensus is that changes in the structural form and chemical functioning of parts of the brain account for cognitive decline and not cell death, because nerve cells can regenerate.”

Thinning of the cortex

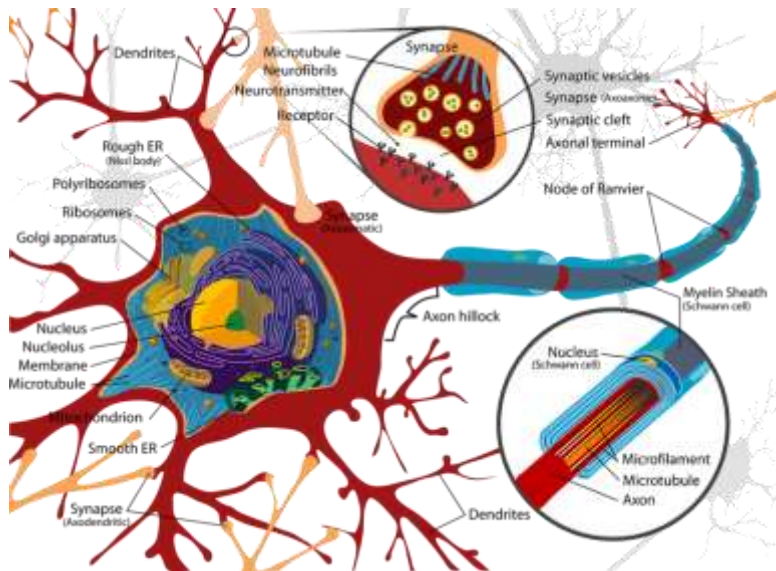
In general, studies have shown that between becoming adults and senior citizens there is an overall decrease in the grey matter of the brain. White matter was found to increase until the 40's, after which it declined for the remainder of the individual's lifespan.

An interesting find from neuroscientists is that the left hemisphere of our brains appears more prone to grey matter loss on average than the right. Our left-brain ability to retrieve words and express language seems to diminish with ageing - if we are to believe these few studies^{xi}.

Age-related neuronal morphology (Changes to the shape/functioning of nerve cells)

Mainstream science has promoted for decades that nerve cell death decreases cognitive function with ageing, however this absurd idea is no longer taught in most medical schools because nerve cells can actually regenerate! More and more research is now showing us that the decline in cognitive functions that we see with age are more to do with changes in the structure, shape or function of nerve cells.

Neurofibrillary Tangles



Neurofibrillary tangles are pairs of corkscrew shaped filaments (tiny fibers from nerves) that become knotted and lose integrity - causing brain pathology. One of the main differences between normal age related changes and neurodegenerative diseases is the relatively low occurrence of neurofibrillary tangles in normal ageing. Additionally, normal brains do not have special structures

called 'amyloid plaques' (similar structures to neurofibrillary tangles) whilst the brains of those suffering from degenerative disorders do have these plaques.^{xii}

Role of inflammation & oxidative stress

Scientists now believe that the brain is damaged through a natural buildup of excess free radicals over the span of a lifetime. Excess free radicals result in decreased mitochondrial function and damage to brain tissue. The result is increased inflammation (swelling), decreased energy and impaired thinking processes. If the damage caused by free radicals is not ameliorated by anti-oxidants then usually the development of brain pathology follows^{xiii}.

Specifically, free radical based damage can cause impaired protein production, lipid (fats - the main component of nerve cells) degradation and DNA mutation in both the cell nucleus mitochondria. DNA mutations and impaired protein production are particularly egregious because these changes in particular result in a plethora of

pathological changes in tissues which then leads to radically (sic) increased rates of ageing.^{xiv}

The theory of 'free radicals and ageing' is based on the understanding that damage sustained by DNA causes brain degenerative diseases - genetic changes (mutations) almost always precede rapid, prematurely induced ageing. Across both human and animal studies, results have been extremely consistent and show in almost every case that DNA damage accumulates with ageing. This understanding is the most popular theory of ageing currently favored by modern neuroscientists and has a reasonable basis for justification.



Chemical changes in the body due to ageing

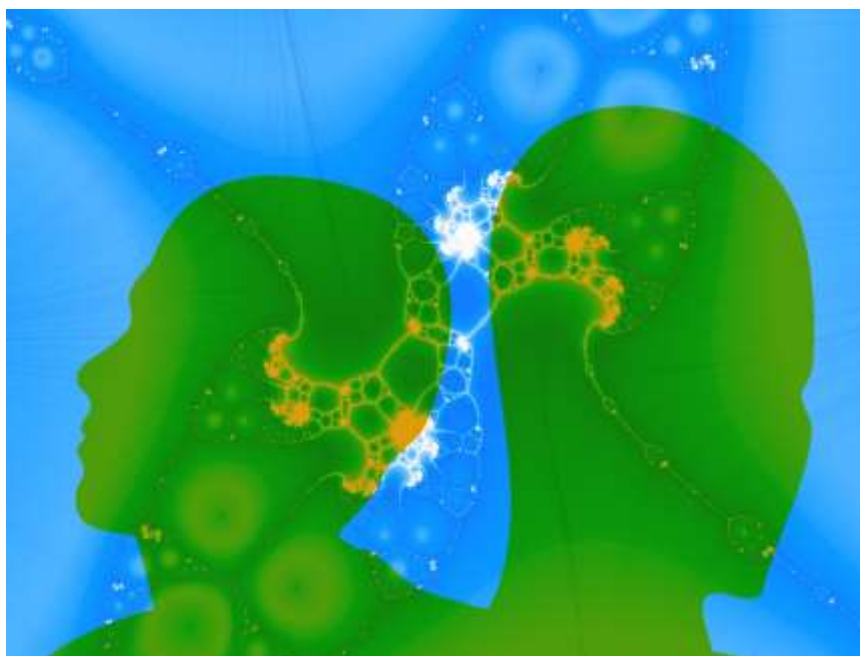
Apart from the physical or structural changes we have seen that accompany normal ageing, we also experience a range of biochemical changes as we mature. Nerve cells communicate through chemical molecules called neurotransmitters. Neurotransmitters are found not only in the brain, but also in the heart and gastrointestinal tract (GIT) too.

A neurotransmitter binds to the surface of a cell by fitting into a receptor 'docking' site, specific to each neurotransmitter. If the binding site or the neurotransmitter molecule is altered in any way, then messaging or information cannot be relayed and nerve function becomes impaired.

Some researchers have identified several changes to neurotransmitters and their binding sites that are thought to occur 'naturally' from ageing. These changes occur in at least three major neurotransmitters, 'Dopamine', 'Serotonin' and 'Glutamate' - each is important for nerve cell communication in the brain and central nervous system.

Dopamine

There is compelling evidence demonstrating a significant decrease in the synthesis of Dopamine^{xv} neurotransmitters and related binding sites correlated with ageing. Dopamine losses are seen in areas of the brain known for memory processing, such as the hippocampus and the amygdala^{xvi}. This



biochemical change is thought to provide the underlying platform from which brain degenerative disease is initiated. It is believed by some that decreased Dopamine causes cognitive rigidity (dogmatism) and physical inflexibility as we age – this would negatively impact our ability to respond dynamically to our environment^{xvii}. Neuroplasticity is also heavily implicated in dopamine production and function.

Serotonin

We have all heard about the importance of Serotonin, which if depleted is associated with depression and impacts wellbeing. There are many different subtypes of serotonin (e.g. 5-HTP) that are transported by serotonin transporters. One study showed significantly decreased levels of serotonin production and transport in aged populations.^{xviii} ^{xix} The serotonin system not only affects how good we feel, but also impacts on the quality of our sleep by regulating melatonin which controls our waking and sleeping cycles. ^{xx} Recently scientists have further noted how diminished sleep also depresses our immune function.

Serotonin is also known to moderate our perception of pain – less serotonin means a lower tolerance to pain in our bodies. As an example, think back to a time where you were sleep-deprived, remember the ‘aches and pains’? Now we know why, serotonin impacts our relative threshold for pain!

Glutamate



Another important neurotransmitter that dwindles as we age is Glutamate. Research studies have shown lower concentrations in elderly participants than that measured in younger participants.^{xxi} These differences in Glutamate levels were observed in the motor cortex (part of cortex responsible for voluntary movement) as well as sites associated with degenerative

brain disorders.^{xxii} Some researchers have suggested that declining levels of glutamate associated with ageing may well be a useful predictor or indicator for certain brain disorders^{xxiii}.


Neuropsychological changes seen during ageing

Neuropsychological changes are changes in a person's personal experiences, awareness, cognitive reasoning faculties and outward behaviour. What follows are typical changes that were found to be correlated with 'being old'.

Orientation – self-awareness in the context of our environment^{xxiv}

Usually medical science evaluates the integrity of a person's mental orientation by checking if they know who they are (identity), their age, where they are physically (place) and the time or date of the neuropsychological examination. Disorientation is one of the most common symptoms associated with brain dysfunction^{xxv} and testing for 'orientation' is included in all medical neuro-evaluations.

Scientific discourse on ageing is now changing with scientists claiming that mild disorientation may be natural in a healthy ageing population^{xxvi}. Although



mainstream science has endorsed this view, more recent research^{xxvii} has shown that loss of orientation may not be a normal process of ageing, with 92% of elderly subjects having perfect normal orientation^{xxviii}. Great news indeed, since if we are all going to lose our orientation as a function of ageing, then ageing couldn't ever become a desirable or pleasant prospect.

Attention

Our attention relates to our ability to selectively focus on one task at a time whilst blocking out awareness of unrelated tasks or information^{xxix}. Without our selective attention, we would be unable to focus on anything. Many elderly report that they are not able to focus attention as well as they did in their youth. Current studies show limited differences between young and old when performing two tasks simultaneously. Other research shows that some elderly folk have trouble retrieving or accessing information when their attention is split between two tasks. However there was no significant difference between test scores of the elderly compared to younger study participants^{xxx}.

Additionally, test scores remained similar between these two cohorts for focused attention on tasks performed over a sustained period of time. In fact, the opposite has been shown with geriatrics in their seventies, remaining stable in their ability to focus for long periods of time^{xxxi}. Again modern science is showing that decline in attentional ability is not part of the normal suite of ageing conditions! Perhaps impaired hearing and vision impact attention testing, because subjects are simply unable to hear the questions; or perhaps the subjects were unable to identify written instructions.^{xxxii} These factors may leave the elderly feeling like they have lost their ability to concentrate as effectively as when they were younger even though the truth is that they concentrate just fine or even better than their youthful counterparts. Healthy ageing is not as negative as we have been led to believe!

Changes in memory

It's currently thought that mild cognitive impairment (MCI) is a natural result of ageing. MCI is a term used to describe mild memory loss and occasional trouble with accessing words. It is synonymous with another term, Age-related memory impairment (AMI). AMI/ MCI are both considered to be normal phenomena amongst the biomedical community. People with MCI may have difficulty finding items and may forget to arrive at prescheduled appointments. MCI increases the risk of developing Alzheimer's disease (AD) by 40% and is seen as a bridge between healthy brain function and degenerative brain disorders. One study reported a 55%




AD incidence within 4.5 years of MCI diagnosis^{xxxiii}. Equally interesting is that not everyone with MCI develops AD.



The process of being able to make new memories becomes more challenging as we age.

Many studies have concluded that this ability declines naturally with age-related changes.



Although science has identified many types of different memory functions, only episodic memory and working memory appear to be affected by natural ageing.

Episodic memory relates to remembering the context or source associated with a memory – for example – knowing that you were given a gift, but not able to remember who gave it, or why or how it arrived in your possession. Episodic memory is networked throughout the frontal cortex of the brain (executive functions involving reasoning tasks), temporal and parietal lobes, forming a vast interconnected lattice in each of us that enables specific aspects of our memory to function.

Working memory is the ability to place an event or facts into short term storage (like a buffer) until the data can be used or assimilated into our long term memory. Apparently working memory is also reduced as we age, according to some scientists, however others have queried this interpretation. They claim that the decline may be explained by the fact that this function is used far less in the elderly compared with young persons who spend hours learning facts and are constantly using and reinforcing these neural networks.

In general, the neuro-nets that are kept active tend to remain active and thus remain healthy. A well-known saying amongst neuroscientists is '*Nerves that fire together, wire together*'. The pathways we do not use tend to degenerate over time. It seems that we must exercise our brains to keep them healthy after all. It's the same with our real muscles, which can serve us as long as we exercise them regularly throughout our lives.

It's easy to protect memory function as we age if exercise is introduced to us early in our lives and naturally integrated as part of our lifestyle throughout adult hood. Even when the elderly are introduced to exercise for the first time, scientists have noticed that the hippocampus increases in size with improved memory function.

Changes in language

The main change that naturally happens as we age is that it becomes more difficult to retrieve words^{xxxiv}. Everyone has had the experience when they try to remember someone's name or a place and the info is just not forthcoming. We say things like, 'Oh, it's on the tip of my tongue...!' This is precisely the type of problem that becomes more persistent as we age.



Genetic changes

The most interesting research into how our bodies and brains function has come in the last decade with the emergence of a relatively new field of science called epigenetics. Epigenetics centres on the effects of environmental impact on our genes. Each biomedical discipline is involved in separate epigenetic research, according to their area of specialty.

Nutrigenomics is a typical example of epigenetic research, applied to effects of nutrition on our genome. Whilst the understanding of how our biology really functions is now exploding, it often requires meta-analysis across a broad spectrum of biomedical categories to stay up to date and informed.

Ageing is a category that spans almost every medical field and it seems that our current understanding is constantly being overturned by new research that invalidates previous medical models. We are living in exciting times and this is very pertinent when looking at research on senescence - we are at the dawn of unfolding a new paradigm of healthy ageing. What is already excitingly clear is that our past comprehension of ageing is outdated by current epigenetic research. For the first time ever, we can imagine that we may soon be able to claim that ageing may not even exist! At least not in the way we see it or have previously defined it.

Effects of ageing vary among people and are due to both individual genetics, coupled with environmental factors. So what do modern neuroscientists say about normal neuro-ageing?

They show that there are changes in gene expression during ageing, in addition to a decline in brain function. The current perspective is that accumulated free radical damage results in switching certain genes off somewhere after 40 years and promotes other genes to become active.

The genes that are typically switched off (regulated) are:

Genes that regulate calcium signalling

- Genes that regulate receptors involved in learning
- Genes that regulate neuronal plasticity – our ability to respond to change

Other genes that are switched on (unregulated) are:

- Genes associated with stress responses that regulate DNA repair
- Genes that promote antioxidant defences within the body

Delaying the pathological effects of aging



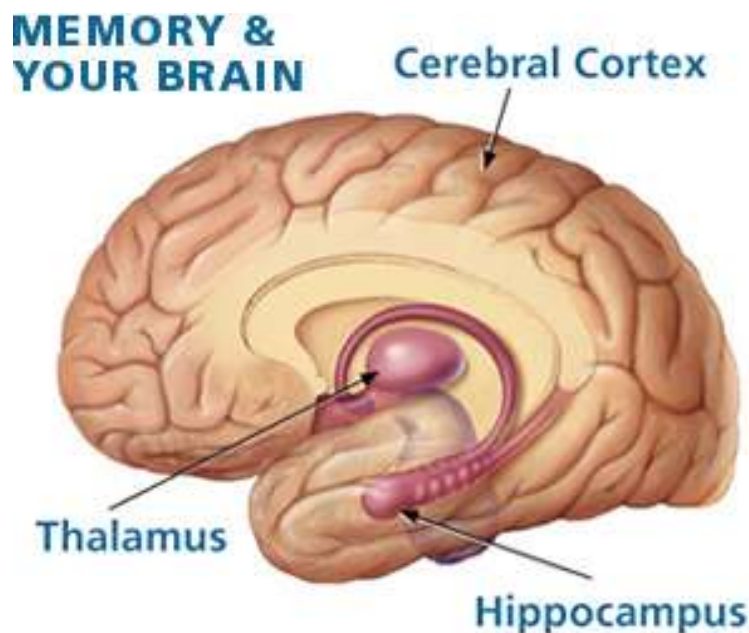
We will explore these areas in more detail in later in this book but it may be worth a quick, sneak preview. Now that we have covered the observable measurable factors that change with age, we can perhaps begin to appreciate the measures one might take to counteract some of the more deleterious effects of ageing.

Ageing is natural and inevitable with the process beginning from birth. What we now suspect is that severe pathology is not synonymous with ageing and can be halted and possibly even prevented through nutrition and lifestyle factors. Furthermore, it might be possible to mitigate the natural non-pathological effects of ageing. In both cases, manipulating the following lifestyle factors in highly specific ways has shown dramatic and significant results:

- Education^{xxxv} results in informed healthy choices^{xxxvi}
- Physical exercise^{xxxvii}
- Engaging in ongoing mental activities^{xxxviii} such as crossword puzzles and reading
- Learning new information such as developing a new hobby or activity
- Managing stress responses
- Keeping social and friendship networks active^{xxxix}
- Ensuring a healthy nutritious diet rich in therapeutic antioxidants^{xl}

Hypothalamus inflammation and GnRH

One study has shown evidence linking inflammation of the hypothalamus with overall increase in aging. The research documented a strong correlation between activation of NF- κ B, a protein complex involved in DNA transcription, inflammatory cascades and cell survival. Activation of NF- κ B alters Gonadotropin-releasing hormone (GnRH) that exhibits anti-aging properties when injected in areas outside of the hypothalamus. Conversely, ageing factors were induced when researchers injected the hormone directly into the hypothalamus. Whilst this initial study suggests a new way to tackle ageing, more research needs to be conducted before these findings can be used to develop a novel approach to anti-ageing^{xli}.



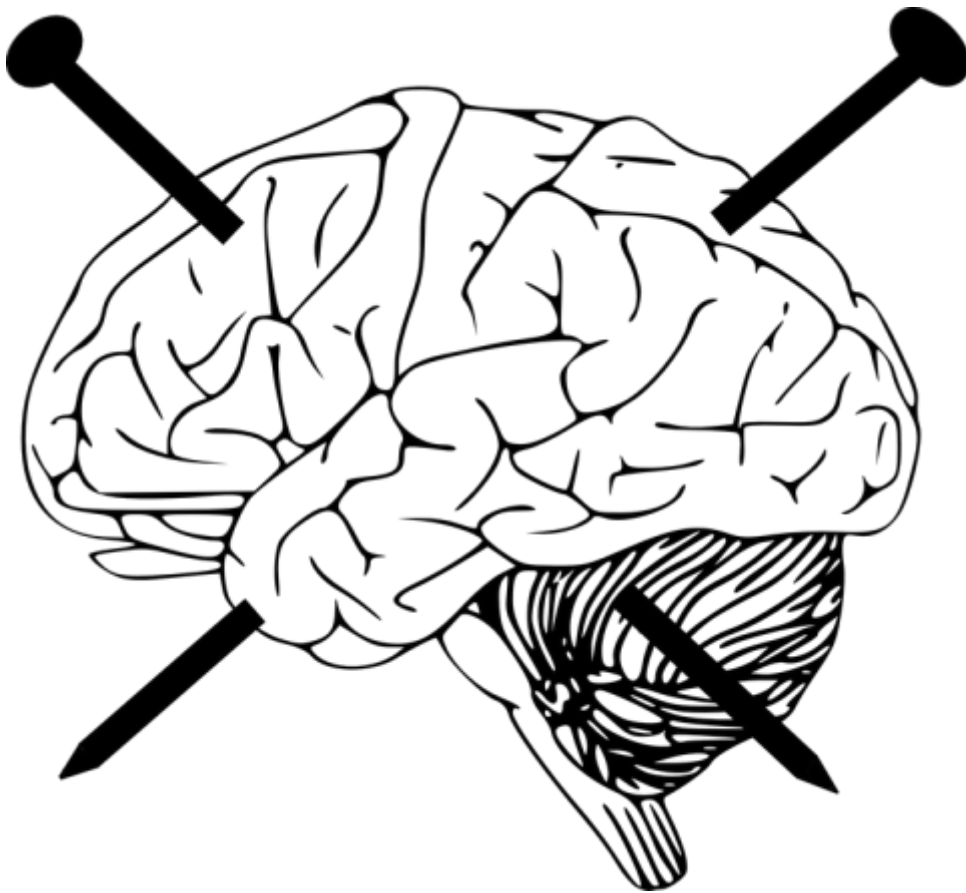
Exercise affects many people young and old. For the young, if exercise is introduced it can form a constructive habit that can be instilled throughout adult hood. For the elderly, especially those that suffer from Alzheimer's or other disorders that affect the memory. When the brain is introduced to exercise the hippocampus part of the brain can regain in size and improve memory.

Causes of memory disturbance

There are many different physical and psychological factors that can affect the way our memory functions^{xlii}:

- **Anxiety**
- **Stress**
- **Depression**
- **Infection**
- **Thyroid imbalance**
- **Dehydration**

- **Nutritional deficiencies such as insufficient Magnesium, Zinc, Vitamin B6 & B12, and folate**
- **Alcoholism**
- **Medication**
- **Substance abuse**
- **Lack of exercise / sedentary lifestyle**



Chapter 2:

Brain Disorders - A Modern pandemic?

A look at Alzheimer's & Dementia



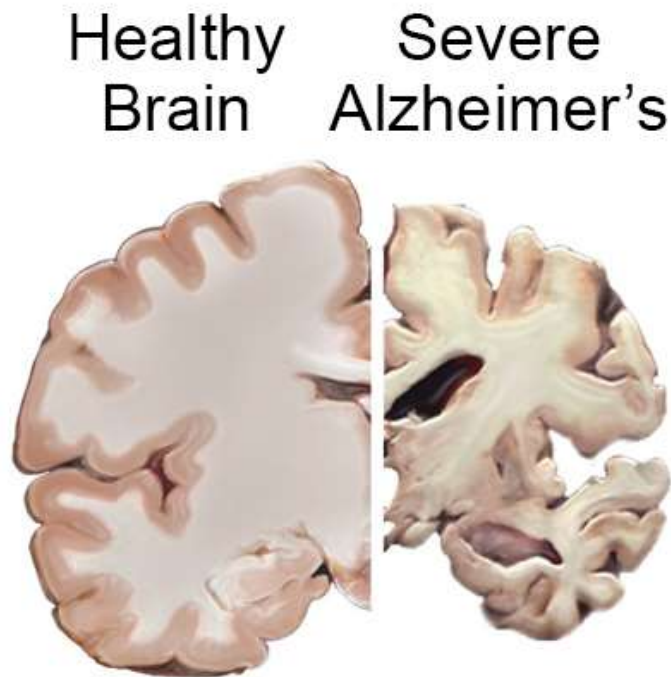
According to the national institute of health ADEAR centre, Alzheimer's disease is defined as a progressive and irreversible brain disorder that currently affects over 5 million US citizens. It is a syndrome that affects people in their 60's and is characterized by the slow destruction of memory and ability to think effectively, ultimately leading to an inability to perform even the most simple of daily tasks.

Dementia is the loss of rational thinking, memory and reasoning that prevents a person being able to live normally. In its most severe form patients are entirely dependent on others to survive. AD accounts for approximately 80% of all reported dementia cases and is identified as the 6th leading cause of death in the US but experts assert that it is the third major cause of death in the elderly population along with cancer and heart disease.

Dementia is classified according to the area of the brain affected for example vascular dementia (changes in arteries or veins). People commonly develop more than one type of dementia, such as developing Alzheimer's with vascular dementia.

In 1906 Dr. Alois Alzheimer discovered unusual changes in brain tissue when conducting a postmortem on a patient who had suffered from an unusual form of mental illness. Her symptoms had included memory deficit, language abnormalities and strange behavior that is characteristic of what we define as AD today. The postmortem identified abnormal clumps of brain tissue, today known as amyloid plaques and bunches of entangled fibers typically known as Neurofibrillary or Tau tangles in our current biomedical models. It's really

interesting that at the time Dr. Alzheimer treated his patient, this mental illness was not considered common, which implies that something has changed in the last century that has elevated this disease to almost pandemic proportions. In fact, we are seeing an increase in AD cases globally, making us question what could create these differences in elderly folk between 1906 and a century later.




These days we know that in addition to the plaques and tangles in AD, we also find nerve cell death or brain atrophy (degeneration). This interferes with the ability of neurons to communicate with the body in terms of sending and receiving information. These changes represent the underlying basis of AD and understandably give rise to the collection of symptoms (a syndrome) that we then diagnose as AD. What do these changes look like?

Cross section of a healthy brain compared to brain tissue atrophy in Alzheimer's disease

Progression of Alzheimer's disease

Most AD experts believe that the onset of AD begins almost a decade before a person is aware of memory and thinking abnormalities. During this symptom-free



period, the brain makes abnormal proteins that create amyloid plaques. Healthy nerve cells start to function less efficiently until they completely lose their connectedness to other neurons and then die off. Although these changes are widespread throughout the brain, most initial damage is sustained in the hippocampi (primarily involved in memory retrieval and storage) in the brain. As the damage spreads through other parts of the brain, we begin to see accelerated neuron death and the brain starts to atrophy. This is when most people are diagnosed with this awful disorder. In the late stages of AD, the brain has shrunk dramatically with large areas of damaged or lost brain tissue.

Preclinical Alzheimer's disease


MCI (Mild Cognitive Impairment) with associated memory symptoms is often the first diagnosis in a progression that leads to AD. MCI memory problems are mild and do not interfere with normal everyday functions as they do in AD. Some people experience difficulties with sense of smell and also report problems with movement. People with MCI may reverse these symptoms back to normal levels of function, although many will land up with AD.

Initial symptoms signalling the onset of AD vary. Some people have more difficulties with impaired judgment, faulty reasoning or difficulty finding words compared with others who have more trouble with memory function.

It is often difficult to diagnose AD early since it's not really a disease, but rather a syndrome (a collection or constellation of observed symptoms) of symptoms that often overlap with changes due to natural ageing.



Mild Alzheimer's disease



At the onset of AD, people may experience forgetfulness, memory loss and difficulty with certain mental tasks. At this stage people may be diagnosed with mild onset AD if they experience some or all of the following:

- Getting lost or 'wandering'
- Repetitively asking the same questions
- Taking longer completing daily tasks
- Personality or behavior changes, such as feeling suspicious of others

Moderate Alzheimer's disease

This level of brain damage impairs areas of the brain that regulate language, reasoning, sensory processing and conscious thought. People at this stage typically suffer from:

- Increased memory loss
- Confusion
- Unable to lay down new memories
- Difficulty learning a new task
- Problems multi-tasking e.g. difficulty getting dressed
- Difficulty adapting to new situations
- Some people can experience psychosis in the form of hallucinations, delusions or paranoia
- May act impulsively (Noticeably so compared with past history)



Severe Alzheimer's disease

Severe AD is identified when nerve cells have lost functionality due to brain atrophy and the widespread development of plaques and tangles in brain tissue. At this point, the disease has progressed so that the often bedridden patient can no longer even communicate and is completely dependent on others for survival. The body will eventually shut down and die at this stage.

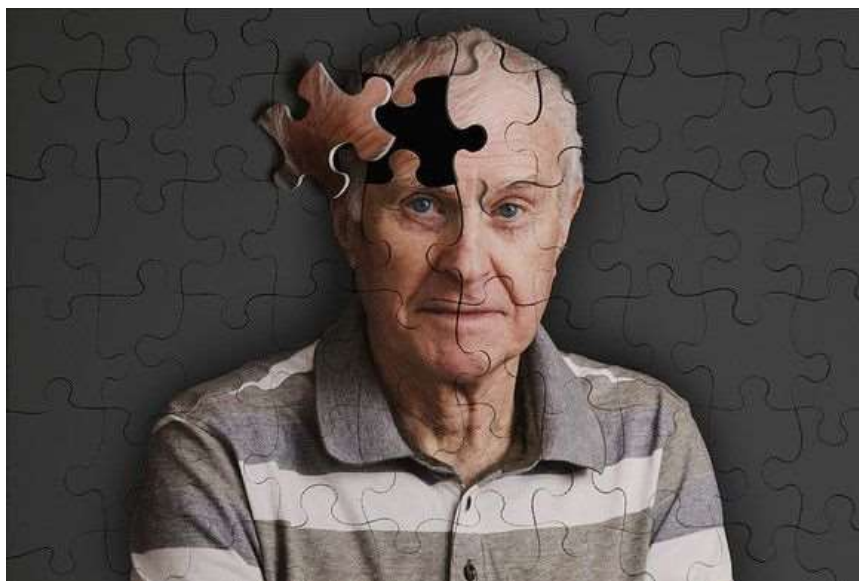
Chapter 3:

The Real Causes – Environmental, Lifestyle and Genetic Factors

What Causes Alzheimer's & Dementia

We don't yet fully understand the causes behind dementia and AD yet. Usually early onset of AD is due to genetic mutation, but late onset is now thought to be caused from a combination of genetic, environmental and lifestyle factors.

The Fundamental factors of Alzheimer's disease



Alzheimer's is seen as a slow degenerative brain disease that is an extension of normal age related changes due to inflammation, increased free radical production, faulty protein conduction and mitochondrial dysfunction. These elements are initiated by genetics, lifestyle factors and our environments.

Genetics^{xliii}

AD typically comes in two categories - late onset AD, in which 95% of cases are diagnosed in their sixties, and early onset AD which make up the remaining 5% and are typically diagnosed in people between the ages of 30 and 60 years. Late onset AD is generally linked with genetic markers linked to the apo-lipo-protein E (APOE).

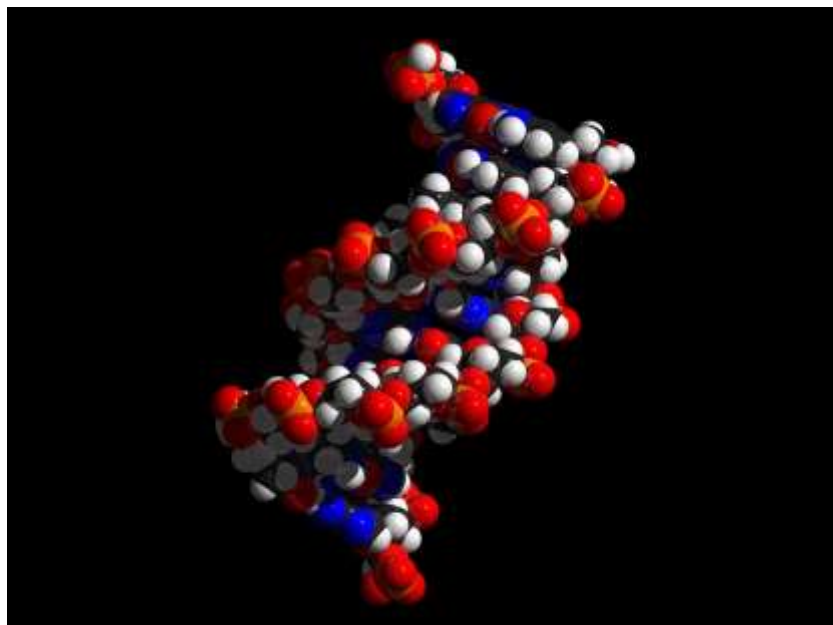
Early onset AD mostly results from inheriting FAD or Familial Alzheimer's disease gene. An extra copy of chromosome 21 found in Down's syndrome also promotes AD because the gene confers harmful amyloid proteins which may form into plaques.


Epigenetic research is also contributing a deeper understanding of the genetic profile of this disease. It's achieving this by linking lifestyle and environmental factors to gene regulation and the mechanisms underlying or contributing to brain degeneration.



Health, Environmental and Lifestyle Factors

Current research is proving far more exciting when it comes to AD. The latest research indicates that there are multiple factors involved in the progression of AD. This is exciting because the outcome of these studies shows that there is a way to completely halt the progression of AD.





There has been a lot of interest in the role vascular diseases such like stroke, heart disease and hypertension play in cognitive functional decline. There has also been a strong correlation with diabetes and metabolic syndrome as having a role to play in dementia and the enhanced damage seen through more severe ageing factors. These chronic lifestyle diseases have all increased in frequency over the last few decades and are now seemingly epidemic levels in multiple countries across the globe.

Upon reflection it doesn't seem that surprising that AD is yet another disorder that stems from lifestyle factors. We will review this research shortly to show that this is indeed the case. If we change our lifestyle, then the risk for serious brain degenerative disease (along with other chronic lifestyle diseases) diminishes. The end of these terrible pathological problems which appear to be endemic to our modern lives may finally and conclusively be in sight.

Risk Factors for Alzheimer's disease

The following is a list of factors that are considered to be associated with an increased probability of developing Alzheimer's disease^{xliv}. The list continues to expand with increased research. Many of these factors can be addressed through lifestyle and environmental changes^{xlv}. Eventually it is hoped that with advances in biomedicine and epigenetics, we will be able to alter our genes and switch them on and off immediately. To begin with, we now have the arsenal required to stave off dementia and AD through nutrition and lifestyle, allowing us to live long, healthy and meaningful lives.

Risk Factors That Are Associated With AD:

- Increased Age
- Family history of Alzheimer's disease
- Carrying the ApoE4 gene
- Some bacterial infections
- Cardiovascular risk factors and disease is associated with increased deposition of amyloid beta – this includes diabetes, atherosclerosis, high blood pressure and high cholesterol^{xlvi} and strokes^{xlvii}
- History of head trauma
- High homocysteine levels

- Nutrient deficiencies
- Abdominal obesity worked out as high waist-to-hip ratio

Theories of Alzheimer's Disease

Theories of Alzheimer's disease are plentiful and all of them contribute to an overall understanding of the symptoms of this catastrophic degenerative process. What follows is a brief review of the theories behind AD.



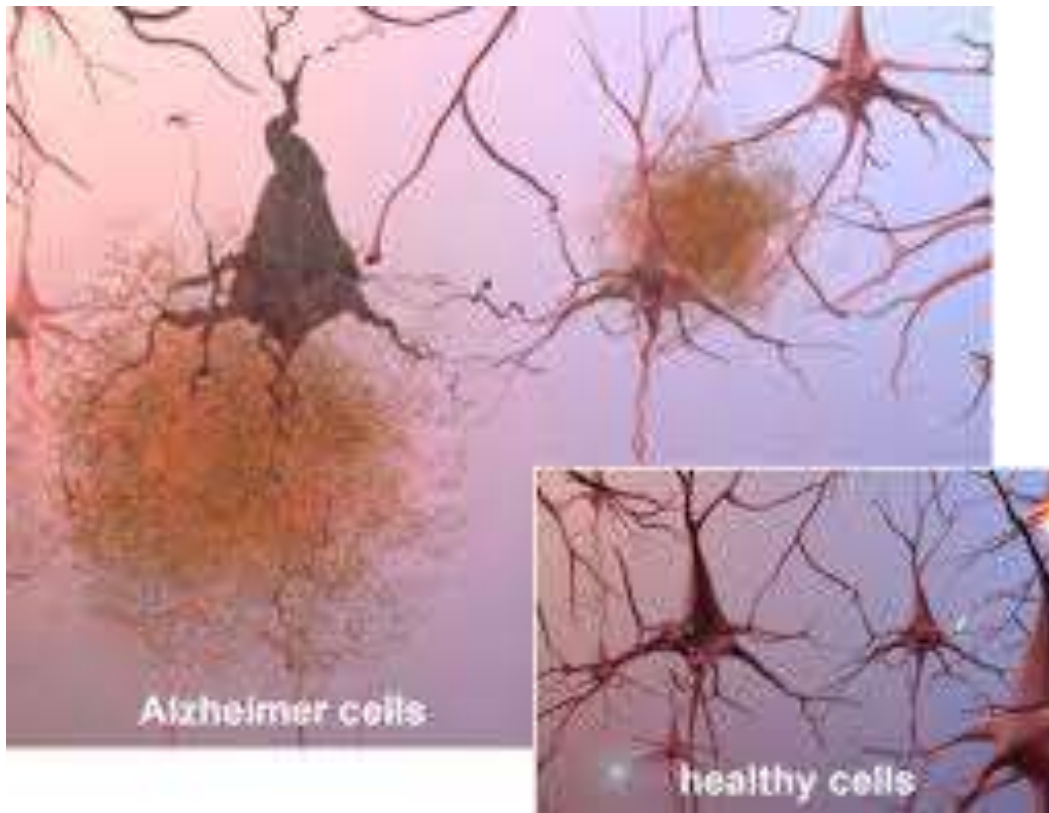
Senile Plaques

We have discussed amyloid plaque clumping as a prominent feature of AD. These protein fragments build up initially in key areas of the brain, such as the hippocampus. The amyloid plaques contribute to oxidative damage associated with increased free radical formation.

Increased free radical formation often causes a phenomenon called "excito-toxicity". Excito-toxicity can be thought of as a receptor site 'burning out' from overstimulation – a 'fried' receptor. Naturally, fried receptors and elevated free radical counts exacerbate inflammation which leads to increased cell death and an increase in neurofibrillary tangles/plaques^{xlviii}. Individual therapies aimed specifically at decreasing these plaques have been disappointing,^{xlix} but combining therapies through nutritional approaches is now producing unbelievably good results.

Neurofibrillary Tangles

We have discussed these tangles before, but what are they exactly? Nerve cells have a skeleton made up of *microtubules* that are held in place by proteins called *tau*. In Alzheimer's disease, the microtubules disintegrate leaving a sticky mess of tau proteins that collect together in bunches called neurofibrillary tangles or NFTsⁱ. These function in a similar way to amyloid beta plaques in that they also cause inflammation and cell death. Once again these disturbances can be avoided through good diet and lifestyle choices.




Acetylcholine deficit

We have seen how all the other neurotransmitter profiles are altered by AD and acetylcholine deficiency - another key neurotransmitter that was once thought to be the main cause of AD. Therapy tackling acetylcholine imbalance alone has not given the hoped for results, even though this neurotransmitter is vital for cognitive processing^{li}.

Although clinical trials prove that acetylcholine supplementation decreases symptoms, it does not prevent the problem. Currently scientists see the neurotransmitter deficit as being a symptom of brain degeneration and not as a cause of AD.^{lii}

Oxidative Stress



Oxidative stress is a process in which volatile molecules called free radicals, cause damage to cells. Free radicals are normal by products of metabolism, but when mitochondria become overburdened with pollutants and toxins then free radical production increases dramatically. This process results in dysfunctional mitochondria. Oxidative stress is majorly involved in the damage caused by amyloid beta deposits, which in turn generate greater free radical production^{liii}. Oxidative stress is involved when neurons are damaged, due to free iron collecting on the surfaces of nearby cells called microglia. Microglia cells support and repair neurons so damaging them directly leads to increases cell death. Iron therefore increases free radical formation and generates oxidative stress with a whole host of concomitant problems.^{liv}

Inflammation

The inflammatory process is crucial to the development of AD. When high levels of amyloid beta accumulate in the brain, it stimulates an immune response. This results in an inflammatory cascade that ends up damaging brain cells^{lv}. Part of this response is promoted by tumor necrosis factor-alpha (TNF- α), a pro-inflammatory cytokine found in high levels in Alzheimer's patients.

Mitochondrial Dysfunction

Mitochondria are our body's energy manufacturers within our cells. They produce energy in the form of adenosine tri-phosphate (ATP). ATP is the energy currency used to finance all our cellular needs. Mitochondrial dysfunction is a hallmark of most lifestyle and age related diseases. A recent discovery has shown that ApoE4, a gene variant linked to Alzheimer's disease, plays an important role in disrupting mitochondrial function^{lvi}. This confirms that mitochondria limit the toxicity of amyloid proteins.^{lvii}

Mitochondrial dysfunction and oxidative stress work together in forming a nasty cycle that ultimately leads to neuronal death and large portions of the brain undergoing atrophy.

Excitotoxicity

Glutamate is the most common 'excitatory' neurotransmitter that needs to be in balance for normal brain function. Over firing of glutamate pathways in the brain can be toxic to neurons, causing a phenomenon known as 'excitotoxicity'.

Excitotoxicity is promoted by amyloid beta deposits, neurofibrillary tangles, mitochondrial dysfunction and oxidative stress.



Excessive activation of *N*-methyl-D-aspartate (NMDA) causes glutamate excitotoxicity of the receptors. This is the basis of a theory behind the FDA approved drug Memantine (Namenda®) that blocks the NMDA receptor and is prescribed for the treatment of moderate to severe Alzheimer's disease^{lviii}.

Decline of Sex Hormones

As we age, we experience a decline in estrogen in women and testosterone in men. Evidence is accumulating that hormonal losses may also be implicated in Alzheimer's disease. Although it is still to be proved, scientists have noticed that sex hormones seem to help protect the brain from developing Alzheimer's disease^{lix}. Future research will help us to better understand this connection.

Infections

According to some researchers, chronic infection either viral or bacterial may contribute to the development of Alzheimer's disease. This theory is not well known by the medical fraternity; however the research to support this hypothesis is constantly growing. For example the *Spirochetes* bacteria has been found in approximately 90% of Alzheimer's patients whilst being absent from control groups^{lx}. *Spirochetes* and other parasites in the brain increases inflammation and the formation of amyloid beta and neurofibrillary tangles. Other studies have found

that amyloid beta is possibly an adaptive response to infection. These findings have largely been ignored by mainstream medical bioscience. The leading view was that organisms could not enter the brain through the blood-brain barrier, so they discounted this type of research. Now with these new discoveries, some scientists believe that combating infections quickly may delay or even prevent catastrophic degenerative brain changes^{lx}.

Diagnosis of Alzheimer's disease

Alzheimer's disease can only truly be diagnosed after death when it's possible to perform an autopsy. Doctors generally diagnose AD by excluding other causes for the symptoms presented. This is usually done through taking a detailed case history, medical pathology tests and brain scans^{lxii}.

Other diseases that need to be ruled out before an AD diagnosis can be made include:

Parkinson's disease


- Stroke
- Tumours(s)
- Sleep deprivation or prolonged insomnia
- Medication side-effects
- Infection
- Dementia unrelated to Alzheimer's



Other Diseases That Cause Dementia^{lxiii}

Dementia is diagnosed when two or more mental functions become impaired, such as memory loss with inability to retrieve appropriate words. Basically treatment is the same as that used for Alzheimer's disease. Some of these other diseases that cause dementia are briefly listed below^{lxiv}.

Vascular dementia:



This type of dementia occurs when blood vessels in the brain narrow and lose elasticity that disrupts blood flow through the brain. This type of dementia is often seen in people who experience strokes. Symptoms are similar to AD but happen suddenly as opposed to a slow progressive decline seen in AD. Treatment is aimed at reducing the main risk factors of smoking, diabetes, and hypertension.

Lewy body dementia:

Another progressive brain disorder caused by buildup of protein fragments called Lewy bodies. Symptoms involve visual hallucinations, a decline in alertness and attention span, and motor problems such as rigidity or muscular tension similar to Parkinson's disease. Treatment attempts to alleviate symptoms rather than cure them.

Parkinson's disease with dementia:


Parkinson's disease occurs when we lose the ability to make dopamine in brain cells. The disease presents with tremors in the hands, arms, legs, jaw and face. Other signs include body stiffness with slow movement, accompanied with impaired balance and coordination. Memory loss can also occur in advanced stages. The pharmaceutical Exelon (rivastigmine) is also prescribed for the treatment of Parkinson's disease.

Front temporal dementia:

This type of dementia occurs when the frontal and temporal anterior lobes of the brain shrink in size. Symptoms range from impulsive to listless behaviour and people may express socially inappropriate behaviour, as well as a slow loss of language functions. There is no known treatment that works, so therapy is prescribed for symptom relief such as anti-depressants. Behaviour modification is sometimes also attempted, but rarely helpful.

Huntington's disease:

Huntington's disease is an inherited brain disorder. Symptoms include mental and emotional disturbance with loss of memory and uncontrolled movements. Early symptoms reported are mood swings, depression, problems learning something new



and forgetting information. Treating symptoms to control volatile emotions is the only type of therapy indicated for these patients.

Creutzfeldt-Jakob disease (CJD):



This disease has been in the news on and off over the last three decades, with reports of prion proteins causing radical and quick changes in the brain ending with death. Prions are abnormally shaped proteins caused by pathological agents that are taken in through eating cows, birds and other contaminated animal products^{lxv}. These abnormal protein fragments cause rapid degeneration in brain tissue and are always fatal. In the early stages, people may experience failing memory, behavioural changes, lack of coordination and visual disturbances. Mental impairment becomes rapidly more severe as the illness progresses. There is no known cure and drugs may be prescribed to deal with symptoms as they rise.



Dementia Risk Factor Matrix^{lxvi}

Very Likely

Advanced age, family history (Alzheimer's, Parkinson's), apolipoprotein E-4, Down's syndrome, head trauma (10x risk w/ApoE4) depression, reduced blood flow, stroke, estrogen imbalance, poor word fluency.

Likely

Emotional stress, toxic damage, alcohol abuse, nutrient deficiencies, transmitter deficits, metabolic deficits, under activity, lower educational level, occupational electromagnetic exposure.

Possible

Aluminum exposure, latent viruses, sugar consumption, olfactory deficit, coronary artery disease.

Chapter 4:

Big Pharma fails to provide effective solutions^{lxvii}



Why pharmaceuticals may actually increase the problem

What follows is a brief list of the medications authorized by the FDA for the symptomatic treatment of AD (including their most reported side effects):^{lxviii}

Mild to moderate Alzheimer's Disease – All the below medications are

cholinesterase inhibitors that attempt to prevent the breakdown of acetylcholine the neurotransmitter involved in communicating between nerve cells and other cells:

- Donepezil (Aricept®)
- Rivastigmine (Exelon®)
- Galantamine (Razadyne®)
- Tacrine (Cognex®)

(Side Effects: Gastro Intestinal discomfort including nausea, vomiting and diarrhoea)

- Moderate to Severe Alzheimer's Disease – this medication blocks glutamate: Memantine (Namenda®) (Side Effects: Dizziness,




headaches, constipation, and confusion, which are difficult to separate out from the common symptoms associated with AD)

- Behavioural Symptoms such as restlessness, sleeplessness, depression and irritability can all be treated with conventional pharmaceuticals used for these imbalances. Each come with their own effects and often further exacerbate AD decline.

All of these medications work by manipulating neurotransmitters involved in signaling information between different nerve cells. They do not cure or help reverse or prevent underlying pathology and do nothing to restore the body to homeostasis.



As with most other pharmaceuticals prescribed for chronic lifestyle diseases, once you begin, you are on medication for the remainder of your life. The reason is that




when we take a pharmaceutical substitute for a neurotransmitter that the body usually assembles on its own, then our body down-regulates the production of these neurotransmitters causing us to be chemically addicted to our medication in order to continue living.

Chemical dependency not only causes our bodies to stop producing its own supply of any given neurotransmitter, but will also affect the number of receptor sites on the cell surface, so that there are fewer sites for neurotransmitters to dock. Eventually the neurotransmitter binding sites close inwards. This leaves extra space on the cell surface to be used for other functions, but we will have lost our ability to regulate our bodies without chemical dependency.

One can see that these treatments fail to treat the underlying causes and in the process, actually make matters far worse. The conclusion that pharmaceuticals make things worse can be drawn even before we look at the side effects of taking large unnatural quantities of synthetic isolated chemicals into our bodies. Their very intended mechanisms of action are part of the problems they create.





Although there may be initial improvement in cognitive performance when taking these drugs, there is certainly much evidence that they only work for a limited period of time before tolerance to their effects develop and in some cases do not help patients at all^{lxix}.

Chapter 5:

Natural scientific solutions

Foods that Can Reduce Your Risk of Alzheimer's disease

Extra Virgin Olive Oil^{lxx}

Everybody has heard about the benefits of extra virgin olive oil and many people have already benefited from including it into their dietary lifestyle. What you may not know is that olive oil has been shown to stop amyloid beta plaque from forming in the brain.

People who live in the Mediterranean eat a diet rich in olive products with very low incidence of cardiovascular and Alzheimer's diseases. Olive oil contains a special phytochemical called oleocanthal. Researchers believe that oleocanthal protects nerve cells by promoting enzymes that effectively remove amyloid fragments from the brain. This process is observed when olive oil is taken twice daily. Olive oil is best taken in a cold pressed form as heat destroys its healing benefits. It's always best to buy your olive oil from nearby local farms where you can check processes used to press the oil. Commercial brands are often contaminated with other products.^{lxxi}



Coconut Oil^{lxii}

Coconut oil has the ability to completely reverse Alzheimer's. It's able to provide the brain with ketones to use as an alternative energy source for brain cells. This is excellent news for those who suffer from debilitating diseases like AD or have diseases where mitochondrial deficiency is involved.

In AD where systems are breaking down and energy production is limited and glucose metabolism is difficult, ketones provide perfect brain power solution. Those with the disease have an issue where brain cells can't effectively use glucose from carbohydrates. Glucose is the main source of energy for the brain, and the neurons



can die without it. Coconut oil provides the brain with an alternative source of fuel called ketones. This unique oil is comprised of medium-chain triglycerides (MCT) which can be converted into ketones by the liver. Some scientific data suggests that Alzheimer's can be reversed during this energy conversion process. In one highly publicized incident, a physician named Mary Newport gave coconut oil to her

husband Steve, who was suffering from Alzheimer's. While the drugs for Alzheimer's disease seemed to make no difference to his condition, he immediately started improving after consuming coconut oil.

All Berries

Acai Berry

Studies have shown the South American Acai Berry pulp to have powerful anti-inflammatory effects. Inflammation is one of the leading underlying results of many conditions associated with ageing. It's also been revealed that acai berry extract inhibits the growth and reproduction of leukemia cells.^{lxxiii}

Aronia Berry

Found predominantly in North America, the Aronia Berry comes in purple, red and black. It has some of the most potent anti-oxidant results published worldwide, with one of the highest ORAC values known to man^{lxxiv}. It can reduce severe inflammation^{lxxv} and studies have proven it to reduce colon cancer in rats^{lxxvi}. In other studies, it helped reduce diabetes too^{lxxvii}.



Billberry

Billberries are related to blueberries and huckleberries, and are usually used for treating ulcers^{lxxviii}. Tests conducted on rats reveal that these help to annihilate intestinal cancer cells^{lxxix}. The potent anti-oxidant content of billberries have also been shown to help with protecting the eyes from oxidative stress -this would assist in combating disorders like macular degeneration, which is commonly associated with ageing.^{lxxx}

Blackcurrant



Very rich in Vitamin C content^{lxxxi}, blackcurrants were able to increase research participant's ability to adapt their eyes to darkness as well as reduce the symptoms of having tired eyes^{lxxxii}. They have shown to protect low-density lipoprotein (LDL) against oxidative stress, which confers cardiovascular protection benefits^{lxxxiii} and improves circulation^{lxxxiv}. Rodents that were fed blackcurrant juice experienced increased longevity^{lxxxv} with improved blood flow^{lxxxvi}. This berry even confers anti-bacterial properties^{lxxxvii} and is also known to alleviate the effects of urinary tract infections^{lxxxviii}.

Blackberry

One of the most tested of the berries, blackberries are known anti-carcinogens, literally self-destructing cancer cells originating from the throat, breasts, colon and prostate^{lxxxix}. Also antibacterial^{xc}, this berry is high in a specifically fantastic anthocyanin (aka C3G), which prevents free radical damage from UV rays^{xc} and protects the liver^{xcii}, as well as blood lipids from lipid peroxidation^{xciii}. Blackberries also reduce inflammation^{xciv} and protect blood vessels and supply^{xcv}.



Blueberry

As well as being a potent source of antioxidants, blueberries are rich in omega-3 alpha-linolenic acid, which is beneficial for brain health^{xcvi}. Blueberries protect the aorta^{xcvii}, as well as prevent the brain from deteriorating or losing memory and

functionality^{xcviii}. Much like blackberries, blueberries induce the self-destruction of cancer cells⁹⁰.



Cherry

Proven to be effective in treating arthritis, goat, pain caused by inflammation^{xcix}, diabetes and heart disease, cherries are also full of anthocyanins with anti-oxidant properties. Tart cherry powder reduced the amount of cholesterol, glucose, triglycerides and insulin in the blood of

rodents^c. It also reduced cholesterol particularly well in the liver and optimizes insulin production in the pancreas^{ci}. Also an anti-carcinogen^{cii}.

Cranberry

Famous for treating bladder, kidney and urinary infections^{ciii}, cranberries are full of beneficial compounds for the body. It disallows E.Coli bacteria from attaching to urinary tract and bladder walls, allowing them to be removed from our bodies with ease^{civ}. Cranberries are also useful in preventing cancers^{cv} and reduce ulcers^{cvi}. They protect our cardiovascular systems indirectly by creating stable blood pressure, restricting platelet accumulation and reducing inflammation.^{cvi}



Elderberry

An age old remedy for flu or the common cold, science has recently confirmed this berry as being effective as such. Elderberry soothes flu-like symptoms and shortens the time one is ill from it too.^{cviii} Studies revealed Elderberry anthocyanins help to protect against free radical damage especially in blood vessels, which is indicative of cardiovascular protective properties.^{cix}

Grape or Grape Seed

Grapes are rich in polyphenols, anthocyanins and antioxidants. The health benefits of grapes were perhaps highlighted by red wine, which confers part of their health benefits^{cx}. Grapes have compounds that help to protect against oxidative stress^{cxii}, protect heart cells^{cxii} and increase the blood flow to the brain, which is highly beneficial for anyone suffering from a brain degenerate disorder. Grapes also help in protecting neurons, potentially preventing strokes!^{cxiii} Other benefits of grapes include the reduction of cholesterol^{cxiv}, inflammation^{cxv} and cancer growth^{cxvi}.



Pomegranate

Probably having the highest number of anti-oxidants, pomegranates have proven to be one of the most effective fruits on the planet at protecting against oxidative stress in our bodies. Pomegranates reduce blood pressure^{cxvii}, arterial plaque^{cxviii} and a few forms of cancer (prostate^{cxix}, breasts^{cxx}, lung^{cxxi} and colon^{cxxii}). This fruit also repairs skin and results in more youthful skin^{cxxiii}.

Raspberries



Including both raspberries and their seeds, results have clearly demonstrated that raspberries inhibit the growth of cancer cells – oral, breast, prostate, cervical and colon cancer in particular^{90 cxxiv cxxv}. This is due to their rich ellagitannin content, a specific polyphenolic compound that converts to Ellagic acid, a potent antioxidant.^{cxxvi}

Strawberry

Another fantastic antioxidant and anti-carcinogen^{cxxvii}, strawberries are known for being a source of minerals and vitamins too. In an experiment done on rats where radiation was used to artificially age them, strawberries were used successfully to decrease deficit in memory and brain function.^{cxxviii}



Also proven in a study to prevent excess blood clots, alleviating blood pressure and reducing the risk of blood heart attacks and strokes.^{cxxix}

Leafy Greens and Cruciferous Vegetables


Vegetables such as the leafy greens spinach and kale, should be consumed every day

for their abundant source of antioxidants as well as fiber. Particularly when in regards to the elderly, research revealed that after eating these, senior citizens did better when tested on memory or verbal ability. In a breakthrough study done supporting this statement, 13,000 nurses were observed in their 60's and then 10 years later in their 70's. The nurses who ate five portions of cruciferous vegetables each week had higher results than those who only ate them twice weekly.

Rosemary^{cxxx}

This herb has been associated with memory and remembrance for





centuries. It's used in a large variety of cooking and is readily available at supermarkets globally. You can also purchase it in its dried form, inside capsules or as Rosemary tinctures. This herb is a brilliant option for treating AD symptoms, as its main benefits include enhancing memory as well as improving circulation. It does this using powerful phytochemicals which work to prevent and aid in the treatment of AD by complementing acetylcholine.

Acetylcholine is a neurotransmitter which is crucial in accessing and storing memories inside of us. In AD patients, it has been shown that Acetylcholine levels are too low, resulting in nerves that can't transmit impulses to one another. Rosemary achieves what most pharmaceutical drugs attempt to do, it manages to correct acetylcholine. It's also all natural and bears no harmful side effects, unlike pharmaceuticals. Water mint is another herb that holds similar properties to Rosemary in that it can also prevent acetylcholine from falling apart.

Lemon Balm

Also known as *Melissa Officinalis*, Lemon Balm falls under the mint family tree. It's best known for its ability to restore and relax nerves. Lemon Balm is widely recommended by natural practitioners as a treatment for Alzheimer's. It has a very similar effect in the brain as rosemary and water mint, acting positively upon acetylcholine. Studies have proven that lemon balm can increase cognitive function and memory




ability almost instantaneously. You can purchase lemon balm dried, as tea, in capsules, as oil or an extract.



Huperziaserrata Huperzine A

This plant contains the phytochemical Huperzine A, that is able to block the



receptor for NMDA. This action is helpful to prevent or reduce the excito-toxic effects of glutamate. Equally impressive is Huperzine A's ability to block the enzyme acetyl-cholinesterase that degrades the acetylcholine. This neurotransmitter is directly involved in the pathways that are involved in memory and cognitive functions^{cxix}. The actions of Huperzine A are similar to Donepezil^{cxixii} and Galantamine drugs with better bioavailability, longer duration and therefore greater efficacy than the pharmaceutical drugs prescribed for Alzheimers^{cxixiii}. Happily, this plant had fewer side-effects than the pharmaceutical counterparts. Research has demonstrated that cognitive performance increased with only 300-500 mcg of Huperzine A taken daily^{cxixiv}.


Panax Ginseng

This amazing plant has an ancient reputation as a powerful traditional Chinese therapeutic that alleviates fatigue, increases concentration and boosts the immune system. Ginseng decreases the death rate of nerve cells in the AD cases that were studied. Recently scientists have shown that this plant species contains ginsenosides, molecules that are structurally similar to steroids, which exert profound effects on memory^{cxixv}. In one study, memory effects were enhanced for a six-hour period, on 400mg dosage. Unfortunately the effects wear off within three months of taking the last dose^{cxixvi}. Whilst these results show promise for symptomatic relief in AD using Ginseng, it doesn't address causal issues.

Ashwagandha

Ashwagandha (*Withaniasomnifera*, winter cherry or Indian ginseng) has been used since ancient times in India to treat imbalances associated with ageing^{cxixvii}. This plant has extraordinary anti-ageing properties. Not only was it able to reverse accumulation of amyloid beta deposits^{cxixviii}, but scientists have also confirmed that it can completely reconstruct networks of damaged neurons and regenerate nerve cells^{cxixix}. Amazingly this botanical is also able to boost acetylcholine levels and provides a safe method of treating AD without harmful side effects^{cxli}. These actions are produced by the withtheanolides compound, an action packed antioxidant superstar^{cxlii}.

Ginkgo biloba



Ginkgo biloba is an ancient anti-ageing botanical superstar. A traditional medicinal herb used to enhance memory and mental function. Modern science has recently confirmed this herb as a potent antioxidant with remarkable healing benefits. It is a useful anti-inflammatory that reduces blood clotting^{cxlii} and also modulates neurotransmission^{cxliii}

A most exciting discovery revealed that ginkgo blocks amyloid beta production in the brain^{cxliv}. Another study has demonstrated Ginkgo's ability to prevent beta amyloid cell death^{cxlv}, whilst multiple studies have shown Ginkgo to have positive benefits on mental performance without negative side effects.^{cxlvi} Other factors that contribute to Ginkgo's anti-ageing success are that it increases blood flow to the brain, which also improves memory and mental processes.

As with many brain supporting nutrients, Ginkgo has shown more powerful results when used as part of a combined therapy with vitamins.

Curcumin

Curcumin is being hailed as a phytochemical that out-performs pharmaceutical anti-inflammatories without any damaging side effects^{cxlvii}. It is found in the turmeric plant *Curcuma longa*. Multiple studies indicate that curcumin's neuro-protective healing properties, at doses between 1 – 4g daily, are a perfect way to combat and prevent Alzheimer's disease. Its impressive array of actions includes:

- inhibition of amyloid beta
- clearance of existing amyloid beta
- anti-inflammatory effects
- Potent antioxidant ability,
- delayed degradation of neurons^{cxlviii}
- Potent metal chelator - binding copper, cadmium, lead and iron^{cxlix}
- Decrease cognitive dysfunction
- Reduce neural synaptic damage
- Reduce amyloid plaque deposits^{cl}
- Decrease oxidative damage from free radicals^{cli}
- Modulates inflammatory cytokine levels in brain cells^{clii}
- *It reduces nuclear factor-kappaB*, a factor that regulates many genes involved in the cytokine inflammatory cascade^{cliii}

Time to stock up on aromatic spices and create new taste sensations – the good news is you will enjoy these spices well into your older years.

Coffee and Caffeine

Coffee has recently been in the news with findings that regular coffee consumption reduces the risk of developing Alzheimer's or Parkinson's diseases^{cliv}. Regular coffee drinkers can decrease amyloid beta deposits by preventing the enzyme that is involved from laying deposits. Another anti-ageing perk for established coffee drinkers, is that coffee has been proven to improve short-term (working) memory^{clv}.



Coffee beans also contain another powerful antioxidant polyphenol called Chlorogenic acid. This phytochemical decreases hypertension, inflammation, blood platelet buildup and also reduces the risk for type II diabetes^{clvi}. Polyphenols are largely destroyed through roasting, so Chlorogenic acid amounts differ according to how long the bean is roasted. There is one method that is patented, that actually increases the amount of polyphenols compared to standard procedures^{clvii}.

Green Tea – Let's go green

This tea is an epic miracle worker. The active components responsible for green tea's powerful benefits are the flavonoid class of polyphenols known as catechins. These potent antioxidant phytochemicals are able to bind to metals (chelator) with powerful anti-inflammatory action^{clviii}. These flavonoids found in green tea, especially epigallocatechin gallate (EGCG), are known to reduce amyloid beta deposits in the brain. Amazingly, scientists discovered a whole host of remarkable healing properties of green tea that include:

- Suppression of mental dysfunction resulting from amyloid beta damage^{clix}
- Decreased neurotoxicity associated with amyloid beta damage^{clx}
- Powerful antioxidant
- Effective anti-inflammatory
- Reduction of Alzheimer rates^{clxi}
- May modify nerve cell signaling
- May regulate genes responsible for cell lifespan
- May play major role in regulating the mitochondria – the powerhouse for energy production in each cell
- Potent metal chelator
- Reduces amyloid beta protein^{clxii}
- EGCG appears to block plaque from forming in the brain
- A component in green tea, L-Theanine decreases anxiety in multiple studies



Cinnamon

This is a spice that most people are familiar with, used in many recipes and food products, but what if it's a medicine as well? In a recent study done in 2016, mice were fed small quantities of cinnamon to assess if it could affect the hippocampus and turn slow-learning mice into fast learning ones^{clxiii}. The

metabolite sodium benzoate (NaB) compound found in cinnamon has shown before to support neuro-plasticity molecules. The results showed that cinnamon is a very powerful hippocampus stimulant and improves spatial memory too, making the slow mice learn much faster. In the case of humans, it should help to improve cognitive and spatial memory too.

Dark Chocolate – an awesome superfood

Finally fabulous news for chocolate lovers everywhere - We can protect our brain and improve our lives by eating dark chocolate regularly.



Dark chocolate / cocoa can:

- Increase our happiness factor by increasing endorphins^{clxiv}
- Endorphins bind to opiate receptors in our brain giving us euphoria. They help balance stress and reduce pain.
- Chocolate contains tryptophan which is precursor to serotonin and naturally helps to alleviate depression whilst boosting positivity and increasing happy mood states
- Chocolate contains another bliss molecule called anandamide that that is the site that binds THC (tetrahydrocannabinol) the active compound in cannabis and like chocolate is responsible for increasing happy feelings^{clxv}.
- Chocolate contains phenylethylamine^{clxvi} and theobromine^{clxvii} which are considered as a mild aphrodisiac when taken together.
- Boosts memory attention span, problem solving and response times mostly as a result of increased blood circulation to the brain^{clxviii}. The cocoa flavonoid polyphenols are behind these potent brain boosting properties^{clxix}.
- Cocoa and dark chocolate contain high levels of antioxidants that protect our brains from free radical damage. Researchers claim that cocoa is worthy to be classed as a 'superfood'^{clxx}.
- Chocolate / cocoa contains flavonoids that improve memory and learning in the hippocampus^{clxxi}.
- Chocolate contains moderate amounts of caffeine which is known to stimulate mental alertness, memory, improved mood and increase in energy^{clxxii}.
- Dark chocolate may alleviate cravings for sweet, savory and junk food^{clxxiii}.
- Dark chocolate has been shown to reduce AD risk and dementia^{clxxiv}.
- Dark chocolate contains magnesium that is known to inhibit the stress hormone cortisol^{clxxv}. This essential mineral is vital to



healthy brain function as it is reported to improve memory, helps to increase focus, promotes a deep sleep, and improves our mood^{clxxvi}.

- Dark chocolate decreases insulin resistance which is helpful in AD because insulin dysfunction is associated with AD^{clxxvii}.
- Dark chocolate acts as a prebiotic in the gut by increasing levels of healthy bacteria, Lactobacilli and Bifidobacteria^{clxxviii}.
- Dark chocolate provides neuro-protection and increases neuro-plasticity – so eating dark chocolate regularly is a smart option^{clxxix}.

Nutritional Dietary Supplements

Alpha Lipoic Acid (ALA)

This powerful antioxidant is able to decrease inflammation^{clxxx} and improve acetylcholine concentration^{clxxxi}. An additional and exciting function of alpha lipoic acid is its ability to detoxify the brain from heavy metals and toxins. This potent metal chelator is able to bypass the blood brain barrier, unlike most other chelators that restrict their work to the gastro-intestinal tract. Initial research has shown promising results. These included stabilized cognitive functions^{clxxxii} in addition to halting disease progression^{clxxxiii} in AD. This was achieved in individuals who took a daily dose of 600mg alpha lipoic acid for two years.

Acetyl-L-Carnitine (ALC)

Acetyl-L-Carnitine (ALC) is another exciting antioxidant that protects and repairs brain damage^{clxxxiv}. It significantly boosts acetylcholine levels and promotes healthy mitochondrial function, giving protection against the destructive effects of the amyloid beta protein^{clxxxv}.

Combining alpha lipoic acid with Acetyl-L-Carnitine, produced synergistic effects in an interesting study that reversed mitochondrial decay in aged subjects^{clxxxvi}. Other studies have shown that ALC was able to decrease high Homocysteine levels. Homocysteine is considered to be a useful biomarker to indicate serious disease progression. High Homocysteine levels are associated with^{clxxxvii}:

- Blood brain barrier deterioration and loss of integrity
- High amyloid beta concentration in brain tissue
- Increased neuro-fibrillary tangles
- Cognitive dysfunction

ALC is a remarkable nutrient, because apart from lowering Homocysteine, it is also able to prevent damage from amyloid beta proteins. It does this by interfering with amyloid beta protein metabolism - without any harmful side effects^{clxxxviii}. ALC is metabolic cofactor and energizer that enhances mental functioning as we age^{clxxxix}.




Vitamin D – the “sunshine vitamin”

There is ample evidence to show that people all over our planet are deficient in Vitamin

D. Older members of our population and those with Alzheimer’s disease are most at risk for low levels of vitamin D. Considering the abundance of receptors for Vitamin D in the brain^{cx}, it is not surprising that this hormone has been noticed by scientists, because of the powerful effects it has on nerve cells.

Vitamin D appears to regulate calcium levels in the brain – this affects whether or not a nerve will fire. Calcium is needed for a neuron to conduct an electrochemical signal. Other actions performed by Vitamin D are related to promoting nerve growth giving it a well deserved reputation as being neurotrophic (promotes new brain tissue growth).

It supports the brain to detoxify harmful substances, with research revealing that there is a 30% increase in amyloid beta clearance out of brain tissue when taking Vitamin D supplementation^{cxci}. It is an impressive antioxidant, with potent anti-



inflammatory effects capable of clearing beta amyloid plaque deposits out of brain tissue.

Our modern lifestyles, along with environmental factors, have affected the amount of time that people spend in direct sunlight. Reducing our exposure to sun has gained increasing popularity amid fears of ozone depletion and increased cancer risk from solar radiation. Vitamin D is manufactured freely when we are exposed to sunlight. Sun blocks may in fact be costing us more than we bargained for! They may protect skin from harmful radiation, but rob us of our ability to produce Vitamin D in our bodies and may well contribute to the widespread deficiency of vitamin D. This is scary when we read research that Vitamin D deficiency is strongly associated with mental impairment! In one study, subjects who took a regular high dosage Vitamin D benefitted by a whopping 75% reduction in developing Alzheimer's^{cxcii}.


According to some experts, it's important to expose 75% of your body to sunlight for 20 minutes daily to benefit from natural Vitamin D production. If this is not possible in your current lifestyle, then Vitamin D needs to be added as part of your daily supplemental program until you are able to revamp your lifestyle and diet for optimal vitamin D levels.

Vitamin D is a fresh reminder that we don't have to suffer debilitating effects of brain degeneration – all we need to do is change our lifestyles to experience wholesome natural health with our mental capacities fully intact.

Vitamins C and E

An increase in the deterioration of lipids from free radical damage is associated with Vitamin E deficiency in Alzheimer's patients^{cxiii}. Combining the well known antioxidants, vitamins C and E into a supplementation program, resulted in decreased oxidative damage in participants with Alzheimer's disease^{cxiv} and also decreased AD rates in general^{cxv}. The healing potential of these vitamins are improved when taken together, showing enhanced synergistic effects with combination therapy^{cxvi}. These results were achieved with moderate dosages of 400 IU Vitamin E and 500 mg Vitamin C taken daily.

Another interesting finding is that Vitamin E was associated with a 26 % increase in lifespan amongst Alzheimer's sufferers. Vitamin E is found in foods such as peanuts,



green leafy vegetables, kiwi fruit, tomatoes and some seed and nut oils, like flaxseed oil and peanuts. Sunflower seeds also contain Vitamin E.^{cxvii}

Vitamin C can be found in rosehips, strawberries, potato skins and all citric fruits.

Docosahexaenoic acid (DHA)

Docosahexaenoic acid (DHA) is an omega-3 fatty acid that is found most abundantly in fish^{cxviii}. Amazingly DHA contributes 30 – 50 % of the total fatty acid content of our brains^{cxix}. Once again this is yet another super nutrient that is able to decrease amyloid beta production^{cc}. It also increases phosphatidylserine levels^{cci}. Studies indicate that Omega-3 fatty acids block neurofibrillary tangle formation^{ccii}

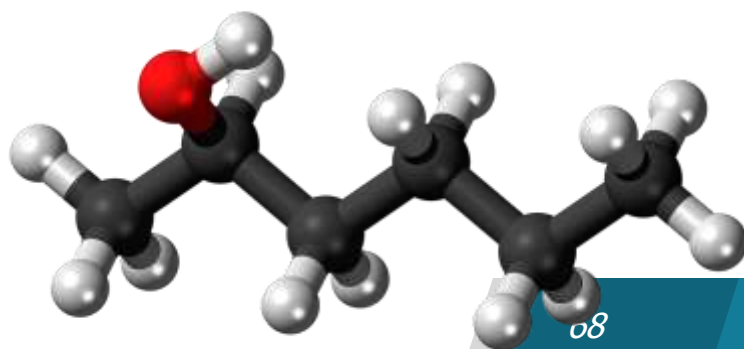
To benefit from foods rich in omega-3 fatty acids, be sure to regularly eat organic walnuts, flax and hemp seeds. Deep sea fish such as Alaskan salmon, mackerel and sardines are also potent sources of these oils. Avoid farmed fish as these are usually grain fed. Another aspect to consider is that many of our oceans are full of toxic commercial products that have contaminated our seafood supply. This is why many health practitioners recommend that fish oils, such as cod liver oil, be taken in supplemental form^{cciii}. Fish is the best solution if your sea water is not contaminated!


Vinpocetine

Vinpocetine is found in periwinkle plant and has been discovered to protect nerve cells, as well as increasing blood circulation to the brain. Other studies have shown that it also protects against excitotoxicity. It has a reputable history in Eastern Europe, as a well tolerated treatment for memory ailments. One study showed that taking 10 mg of this botanical three times daily was particularly good at decreasing symptoms associated with vascular dementia^{cciv}.

Pyrroloquinolinequinone (PQQ)

Pyrroloquinolinequinone (PQQ) is an incredibly potent health nutrient that stimulates the growth of new mitochondria in aging cells^{ccv}. It also is able to protect and repair mitochondria^{ccvi}. Scientists





believe that it may prevent Alzheimer's disease because apart from its mitochondrial healing effects it is also able to protect against amyloid beta deposits^{ccvii}. PQQ supplementation with 20 mg per day caused significant cognitive improvement in patients. This effect was amplified^{ccviii} when PQQ was taken together with 300mg of CoQ10.

Phosphatidylserine

Phosphatidylserine (PS) is a natural constituent of our cell membranes. Research has found that supplementation with PS dramatically improves memory functions in those with memory impairment^{ccix}. Recent research^{ccx} has demonstrated that supplementing PS with omega-3 fatty acids especially DHA, gives optimal results due to combined synergistic effects.



Resveratrol

Resveratrol is a phytochemical superstar due to its amazing healing properties. This potent Stilbene polyphenol is what imparts the color and aroma to grapes and red wine. It is found in some of the highest concentrations in boiled peanuts, blueberries and Japanese knotweed. This incredible nutrient soared to global prominence after scientists discovered it had phenomenal anti-ageing benefits.

Resveratrol has been shown to^{CCxi}:

- Reduce amyloid beta levels
- Reduce neurotoxicity
- Decrease cell death
- Protect the hippocampus from degenerating
- Prevents learning impairment
- Improves coordination and balance
- Neutralizes free radical damage and protects nerve cells
-

One study demonstrated that a lower rate of dementia and Alzheimer's disease was associated with regular intake of a glass of red wine^{CCxii}. Red wine polyphenol antioxidants have also been reported as halting the degenerative process of AD^{CCxiii}.

Grape Seed Extract

Grape seed extract is a well known natural therapeutic, used traditionally to treat cardiovascular disease due to its high procyanidin antioxidant profile. Studies^{CCxiv} have shown it to be highly protective against amyloid beta damage. Grape Seed extract is able to slow the progression of Alzheimer's disease, in addition to providing a vast array of extra health benefits.

Magnesium

Magnesium is an essential mineral needed as a co-factor for many enzyme functions. It's also needed for NMDA glutamate receptors to work during memory processing^{ccxv}. Magnesium is particularly important for long term memory. It's well documented that a magnesium deficiency can cause mental dysfunction^{ccxvi}. Studies have found that imbalances in serum magnesium levels cause cognitive impairment^{ccxvii}.

B Vitamins

Alzheimer's disease (AD) and mild cognitive impairment (MCI) are both linked to low levels of Vitamin B6, B12 and folate^{ccxviii} and increased homocysteine levels^{ccxix}.



Vitamin B12:

Low B12 levels are associated increased cognitive deterioration^{ccxx} and twice the risk of developing Alzheimer's disease within three years^{ccxxi}.

Vitamin B6:

Low levels are associated with an increase in brain lesions patients with Alzheimer's disease^{ccxxii}.

Folate:

Folate is essential to make DNA^{ccxxiii}. Low levels are strongly related to cognitive impairment^{ccxxiv}.

Niacin:



Increased levels of daily dietary niacin (vitamin B3) reduces mental decline by 70 %. Niacin has been reported as being protective against Alzheimer's disease.

Coenzyme Q10 (Co-Q10)

Co-Q10 is a cofactor used by many chemical reactions in our cells. It is only found in organ meats and in some fish – sardines are a good source. It appears to be a vital antioxidant for protecting our brains from ageing and AD. It has shown increased benefits when combined with other nutrients known to prevent brain degeneration^{CCXXV}.

CoQ10 beneficial properties include:

- Negating the effects of mitochondrial dysfunction
- Decreasing excessive production of amyloid beta^{CCXXVI}
- Potentially prevents amyloid deposits^{CCXXVII}
- Improving memory, attention span and behavior in AD patients^{CCXXVIII}
- Improving energy production by reducing oxidative stress
- Improving immune function^{CCXXIX}

N-acetyl cysteine

N-acetyl cysteine (NAC) is a precursor to glutathione - a super potent antioxidant. Many studies have associated neuro-degenerative diseases with glutathione deficiency^{CCXXX}. Glutathione levels are boosted by taking NAC and this protects against oxidative, particularly in the brain. In another study, oxidative damage was alleviated with improved mental performance when taken regularly^{CCXXXI}.

Blueberry Extract

Berry important news! Blueberries have recently astonished scientists when they discovered they contain polyphenols that reverse cognitive and motor dysfunction^{CCXXXII}. In addition, it stimulates new brain cell growth and improves neuroplasticity or the ability to adapt to change. These results were evident in the hippocampus, which is the site where memory is processed and largely affected by AD^{CCXXXIII}. Blueberries were rated as the top antioxidant in terms of their potent ability




to neutralize free radicals^{CCXXXIV}.

Most of us love these berries so it's not difficult to protect ourselves by taking a handful daily. It's important to eat a variety of berries, as they are all potent antioxidants and eating a variety in combination causes an increase in many health benefits.

Luteolin

Luteolin is another polyphenol found in fruits and vegetables, such as green peppers, carrots, and celery that is an effective protector against AD. Initial studies have reported a significant decrease in amyloid beta levels and a reduction in neurofibrillary tangles. These are merely good reasons to increase these nourishing colorful foods into our daily diet.

Wild Green Oat Extract



Wild green oat extract is derived from *Avena sativa L.*, a powerful and natural MOA-B (mono-amine-oxidase beta inhibitor)^{CCXXXV}. This property causes increased Dopamine levels in the brain and decreases oxidative stress in nerve cells, providing a remarkable nutrient to combat dementia's naturally^{CCXXXVI}. This is a phenomenal property when one considers that AD patients have approximately three times the amount of MOA B activity compared to healthy folk^{CCXXXVII}. Other benefits that MOA B inhibitors offer is reduction of amyloid beta, improved mental function and enhanced memory, making this extract a potent anti-Alzheimers supplement^{CCXXXVIII}. Advice from a natural medical physician would be needed to verify safety and determine dosing schedules.

Nicotinamide Riboside

Nicotinamide riboside is an active source of vitamin B3 that is used to moderate cellular metabolism and DNA transcription^{CCXXXIX}. What this means is that this vitamin is able to alter energy levels, protect DNA from harmful changes, offer stress resistance, increase survival and defer harmful factors that contribute to pathological ageing^{CCXL}. Research studies are heaping praises on this amazing vitamin compound for the incredible array of potent anti-ageing benefits it confers^{CCXLI}.

Bacopamonnieri – (Brahmi)^{CCXLII}

This wonderful herb has been used for centuries by Ayurvedic practitioners to treat memory problems, hypothyroidism, fatigue, anxiety and stress^{CCXLIII}. Two decades ago scientists discovered that it also has powerful anti-cancer properties. In addition, this herb has been shown to increase nerve cell communication and decrease amyloid plaques. Both of these actions support optimal brain health. This herb is considered to be safe on doses of 300mg daily^{CCXLIV}.

Chapter 6:

New Horizons – Re-inventing ourselves

Let your Lifestyle provide a platform for Health and Wellness

Changes that work to reduce risks for brain degenerative disorders

Winning Lifestyle Strategies to Improve Mental and Emotional Health



The new scientific research that we have reviewed in this book provides compelling evidence for making healthy nutritional choices that will benefit and protect us. Equally important are lifestyle strategies that have come to our awareness that provides a way to ensure that we lead healthy quality filled lives with all our faculties intact. We will briefly review the main lifestyle factors that have been under the research spotlight as being critical in supporting optimal brain health.

Exercise – a powerful reformer

Those of us who lead sedentary lives may be resistant to the idea of exercise – that is until you read about its powerful anti-ageing effects! Some of the general benefits include decreasing cardiovascular disease risk and reducing stress. One of the most novel understandings that emerged through the scientific literature is that all types of exercise create new connections in the brain. The research is exciting because exercise is correlated to increased nerve cell growth in the exact area that regulates memory – the hippocampus. It is surprisingly that even gentle exercise, such as walking, increases neuronal growth in the hippocampus.^{ccxiv}

Exercise improves learning and memory skills. Most importantly, exercise generates the formation of mitochondria, which enhances energy production in our cells. Using our muscles enhances blood flow to circulate through our body. It helps the immune system by clearing the lymphatic vessels and clears toxins from our



system. It is associated with improved moods and well being.^{ccxlv}

To benefit from exercise, experts recommend a routine of at least 20 - 30 minutes of exercise for five days a week.

Learn something new - activate your curiosity



Our brains enjoy novelty and now we know that while we are learning, we are naturally protecting ourselves from disease by keeping the brain more active. 'Neurons that fire together are wired together' is the catch phrase coined by neuroscientists who claim that when we use different pathways, we are increasing

neuroplasticity, ensuring that our mental functions are robust as we age. Medical experts recommend activities such as learning a new instrument, taking up a new hobby or even practicing crosswords or Sudoku will have the desired effect. The key is to find novel areas that interest you. People report feeling more alive when they are learning something new that they enjoy! Make it a goal to learn something new daily – reactivate your curiosity!

Avoid toxic chemicals as much as possible

It's not really possible to avoid all toxins in our lives, but in order to protect ourselves from developing AD we need to at least attempt to avoid pesticides and harmful chemicals as much as possible. Many products used in agricultural practices have not only been linked to massive bee deaths, but also to brain cell death. Increased exposure to toxins resulted in a whopping 53% increased risk of developing AD. Many toxins affect mitochondrial function by increasing free radical formation and oxidative stress so finding ways to detox from contaminants and avoiding products that are known to be toxic, is at the very least a lifesaving and sensible strategy to adopt for healthy living.

Avoid Lead and Aluminium

These metals are both seriously toxic for our bodies and our brains in particular. Both have been linked to Alzheimer's and lead has been connected to Parkinson's disease. It has long been established that lead has serious negative effect on children's brains. Lead has also been associated with degenerative brain processes as people age.

PCBs (Polychlorinated Biphenyls)^{ccxlvii}

This substance, although having been banned in the 70s, is found throughout our modern environments and contributes negatively to AD. They are not easily broken down and cluster in parts of the brain that can cause serious damage. Even low-level exposure is enough to do so, according to some scientists out there.

Remove Chronic Stress and Anxiety from Your Life

Don't worry, just be happy! Stress is linked to creating Alzheimers in people. A study carried out once again on mice revealed to us that highly stressed mice functioned dismally in terms of memory. These stressed mice also had more beta-amyloid proteins found inside their brains.^{ccxlviii} A different study back from 2010 also pointed that people in their middle age who stress a lot are more likely to develop AD than those that don't. This study was carried out on Swedish women for 35years and then published later in the Brain Science Journal. Dementia came 65% more in those who were stressed out.



Depression can raise your risk of Alzheimer's disease^{ccxlix}

Depression has a major effect on us and the structure of our brains, physically altering the structure in a negative way. This structural change leaves us with a 50% increased risk of developing AD. This deformation that occurs as a result of depression prevents more blood from entering the brain, which will lead to further AD symptoms until it's full blown. Try your best to be as happy as possible and enjoy life as much as you can!

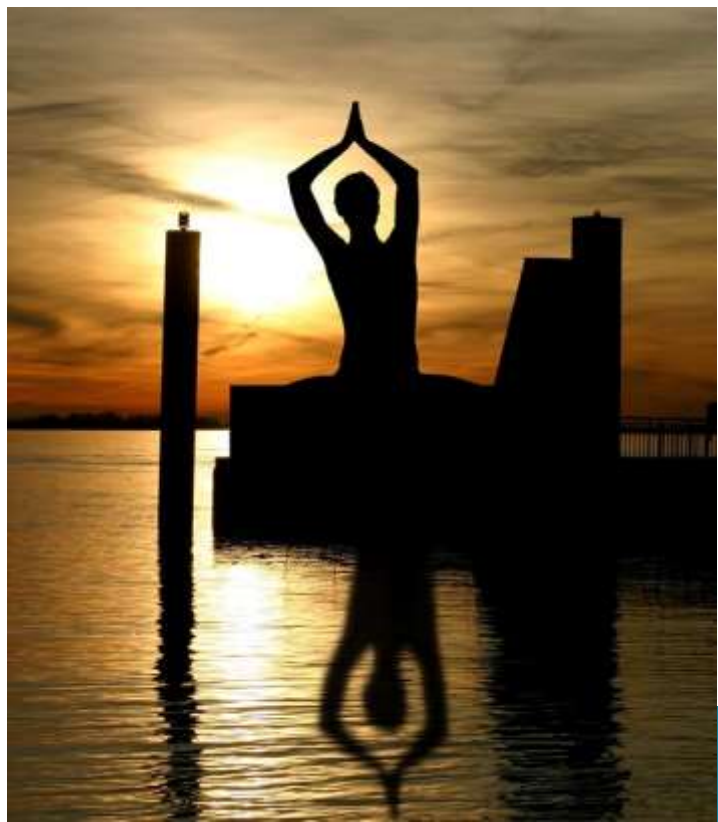


It's not always necessary to stress or feel depressed. Activities like meditating, socializing and exercise can help you to reduce depression and anxiety. Eating nutritiously also has a role to play in fighting depression, as you need the right sources of nutrients to make happy chemicals!

New Horizons – Meditation is the art of re-inventing ourselves

Meditation is a wonderful health booster and has been revered for many thousands of years to still the mind and hone mental clarity. Medically, it has an impressive repertoire of being able to lower blood pressure, stress and pain caused from conditions similar to arthritis or fibromyalgia.

The Alzheimer's Research and Prevention Foundation (ARPF) did a study with the University of Pennsylvania on how meditation affects memory loss. In this study, a group of individuals was made to do KirtanKriya (a Kundilini Yoga traditional meditation) for 12mins a day for eight weeks. After that time it was proven that meditation increases brain activity in areas



that dominate memory, dramatically improving cognitive and memory function in patients, as well as selective attention and focus. It also happened to reduce anxiety, depression, cortisol and also increased their immune functions!^{cd}

Sadly, Alzheimer's disease is one of the costliest diseases for the entire Western world. Research has conclusively shown that what you do or don't do - in your middle years - can greatly impact your risk of Alzheimer's. Make the simple changes discussed in this report and dramatically reduce the chance that you will end up with this devastating issue. You owe it to yourself and your family.

Avoid Processed Foods and Alcohol

No matter how old you are, your body needs a good quality organic whole food diet, rich in nutrients from fruits, vegetables, nuts and seeds to keep healthy. Studies have linked fast food to the development of AD; revealing fast food to deform the brain and create the changes in chemicals observed in AD. While more people understand that fast food is more of an issue for diabetics, patients with AD also have a problem with insulin much like diabetics. Foods that help to regulate insulin will be of benefit to both diabetics and Alzheimers cases alike. A diet that is low in sugar and has no refined/processed foods is ideal.

Fast food has an unfathomably high level of nitrates, additives and preservatives which are all linked to faster development of AD. Nitrates are also exposed to us via rubber, latex, fertilizers and pesticides. Additives to fast food such as aspartame and neurotoxins like MSG are devastating to our brain health and so especially devastating to AD patients. Alcohol is also highly not recommended for AD or dementia, as it already is known to reduce memory loss and shrink the brain after prolonged drinking.



A Look At Different Diets

The Mediterranean Diet


People living in the Mediterranean have caught the attention of scientists due to multiple studies indicating that people living in this region experienced less prevalence in Alzheimer's disease as well as a marked reduction in cardiovascular disease. In fact this diet had significantly lower statistics for most dementias and brain degenerative diseases^{ccli} including Parkinson's and MCI (Mild Cognitive Impairment).

AD risk was also decreased when people were on a diet that was rich in fruits, vegetables, fish, nuts, and legumes and had lower intakes of meats, high fat dairy, and sweets^{cclii}. The Mediterranean diet not only reduced risk of AD but also slowed the rate of progression from pre-dementia to brain degenerative disease states.

One study showed that people who adopted the Mediterranean diet most closely showed a 28% decrease in developing mental impairment disorders compared to study controls that did not adhere strictly to the diet^{ccliii}. This study also showed that participants who were diagnosed with MCI at the onset of the study showed a 48% risk reduction in developing AD after observing the Mediterranean diet for 4 years^{ccliv}.

Yet other studies have





shown that AD patients that strictly observed the Mediterranean diet were 76% less likely to die than other participants that did not manage to keep the dietary guidelines. These subjects increased their life span by an average of 3.9 years. Those that followed the diet moderately lived an average of 1.3 years longer than those that adhered least to the diet^{cclv}.

Researchers studying the effects of the Mediterranean diet have noted that the diet is made up with individual food items such as fish, vegetable oils, non-starchy vegetables, low glycaemic index fruits, and red wine, all of which have been independently documented as being potential factors for combating dementias and AD^{cclvi}.

The Ketogenic Diet

There has been much interest in the Ketogenic diet in connection with its neuro-protective effects against brain degenerative states. The diet involves following a strict protocol of consuming foods high in fats with moderate protein intake and limited carbohydrates. This diet causes the body to initiate a switch from the normal metabolic process of burning glucose to an alternate route of burning ketones as a source in fuel. This process occurs when the body breaks down fat producing ketones to supply energy^{cclvii}.

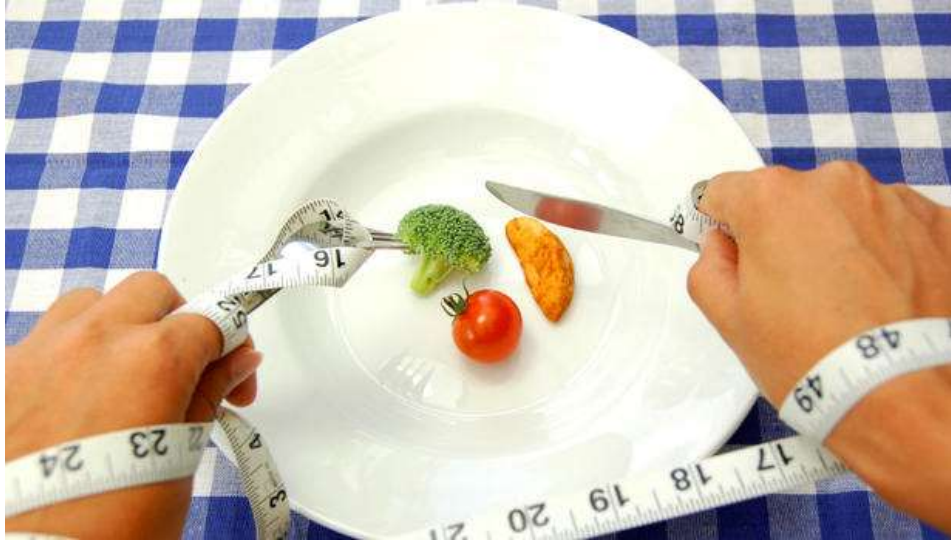
Initial research appears promising with the ketogenic diet producing a decrease in amyloid beta levels after a 6 week period one in animal study. More research is needed as ketogenic diets are also associated with some adverse side effects so caution is required^{cclviii}. Some of the adverse effects of the ketogenic diet include increased cholesterol, kidney stones and possible gastro-esophageal reflux^{cclix}.

The Caloric Restriction Diet

There has been some research to show that restricting caloric intake increases longevity and confers protective properties against developing degenerative brain disorders^{cclx}. The researchers showed that an increase in caloric intake was correlated with double the risk for developing MCI – Mild Cognitive Impairment. The association was caloric dependent with low caloric intake showing the lowest incidence of cognitive dysfunction in the aged population studied^{cclxi}.

Natural scientific solutions

After reviewing the research around diet and brain degeneration one thing is clear – diet remains the largest contributor to allow us to age naturally and offers significant protection to grow old without neurodegenerative disease crippling our



worlds and burdening our loved ones who are needed to take care of us when we are no longer capable.


As we now know consistently maintaining a healthy diet is of primary importance so

we need to find a diet that is both functional and effective. We need a diet that is easy to follow and one that we can also enjoy. We have looked at many different foods and botanicals that offer dramatic anti-ageing affects and if we take these and increase these sources in our nutritional lifestyle then we will benefit and achieve our healthy goals. Theoretically we should need nothing else other than our diets and healthy lifestyle factors to succeed at creating a new paradigm of growing old, one that is creative, active and productive with enhanced energy and vital functions intact. The research is compelling – we don't have to let ourselves suffer...

Dietary considerations to optimize memory and prevent brain degeneration

These recommendations form the basis underlying the Memory Magnetizer Diet rationale

- Eat a diet rich in polyphenol antioxidants
- Eat foods rich in choline
- Eat healthy fats that decrease inflammatory pathways in the body – Avoid saturated and trans fatty acids especially hydrogenated fats.
- Balance omega 3 to omega 6 fatty acids ratio – reduce animal fats and increase vegetable and nut oils.

- 
- Avoid simple sugars and increase complex carbohydrates that have low glycaemic index properties to keep a stable blood sugar balance
 - Avoid refined processed foods – choose whole-foods wherever possible and increase raw food content – consider adding smoothies to your diet
 - Avoid commercial sweeteners that contain aspartame
 - Eat herbs and spices that are known to chelate metals
 - Avoid colorants and additives such as MSG known to clog efficient mitochondrial function
 - Avoid genetically modified foods – we need to eat natural organically grown foods
 - Avoid animal products where animals are grain fed – choose free range products
 - Try to eat local produced foods – not only can you support your community but you are also able to check on agricultural practices
 - Read food labels – it's important to know what you are taking into your body
 - Eat several smaller meals throughout the day to keep blood sugar levels stable and increase energy efficiency
 - Drink plenty of fresh spring or filtered water – at least 6 – 8 glasses daily
 - Avoid drinking fruit juice unless the pulp has been added back to the juice. Berry juices contain the highest brain enhancing polyphenols. Include a glass of red wine at least 5 days of the week into your dietary habits. Enjoy organic filtered coffee in the mornings or indulge in a mug of cocoa
 - Don't forget to include green tea into your life
 - Try to avoid soy products that are commercially produced unless they have been fermented properly- they are addictive and impact negatively on working memory
 - Eat as many items on the Memory Magnetizer shopping list as you can
 - Combine a variety of different colored foods into your diet on a daily basis
 - Increase seeds and nut consumption

Part II: **Memory Repair Protocol**



Day1	Day 2
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Grapefruit	Papaya with lemon
Boiled Egg slice with whole grain toast	Flaxseed cracker with peanut butter
Filter Coffee	Filter coffee
Mid am	
Handful mixed nuts and seeds	Handful mixed nuts & seeds
Green Tea	Green Tea
Dark Chocolate - 1 block	Dark Chocolate - 1 block



Lunch	
Grilled Fish with Berry Sauce	Greek Chicken Pitas
steamed vegetables	Garlic Sauce
turmeric smoothie	Green salad
	Fruit and veg smoothie
Mid afternoon	
Handful mixed berries	Handful mixed berries / berry smoothie
Dinner	
Chickpea Salad	Portion brown wild rice
Avocado and carob mousse	Chopped fresh vegetables
Glass red wine	Homemade Humus



	Apple cider vinegar and olive oil dressing
	Glass red wine
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
Notes:	



Day 3	Day 4
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Get up and Go Smoothie	Oats with berries
Muffin	Coconut cream
Filter coffee	Filter Coffee
Mid am	
Handful mixed nuts and sunflower seeds	Turmeric smoothie
Green Tea	Handful mixed nuts and sunflower seeds



Dark Chocolate - 1 block	
Lunch	
Veggie Pita pockets	Wild rice salad
Chocolate Berry smoothie	Fruit smoothie
Mid afternoon	
Whole grain crackers with peanut butter	Flaxseed cracker with cottage cheese
Dinner	
Chicken stew	Quinoa salad with greens and legumes
Aromatic couscous	Glass red wine or grape juice
Red grape and pomegranate juice	Dark Chocolate - 1 block



hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
Notes:	



Day 5	Day 6
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Muesli with berries and nuts	Boiled Egg
Filter coffee	Flaxseed cracker
Glass water	Filter coffee
Mid am	
Flaxseed cracker with peanut butter	Turmeric smoothie
Green Tea	Handful mixed nuts and sunflower seeds
Dark Chocolate - 1 block	



Lunch	
Salmon and steamed vegetables	Spicy Chickpea salad
Turmeric smoothie	Tahini Sauce
	Coffee or tea
	Water
Mid afternoon	
Fruit and seeds	Chocolate Berry smoothie
Lemon or berry sorbet	
Dinner	
Veggie Sushi	Grilled cod
Avocado and carob mousse	Fresh berry feta avocado salad



Glass red wine or grape juice	Lemon and olive oil dressing
	Glass red wine or grape juice
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
or herb tea	or herb tea
Notes:	



Day 7	Day 8
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Spinach basil and tomato omelette	Greek yogurt berries & walnuts
Filter Coffee	Muffin
Water	Filter Coffee



	Water
Mid am	
Whole grain crackers	Turmeric smoothie
Cottage cheese	Handful mixed nuts and sunflower seeds
Lunch	
Lentil soup & Swiss chard	Lamb Pita Pockets
Green / herb tea	Fruit salad
Water	Green / herb tea
	Water
Mid afternoon	
Handful mixed nuts and sunflower seeds	Green power smoothie



Green Tea	
Dark Chocolate - 1 block	
Dinner	
Chicken Stew	Wild rice salad with greens and legumes
Aromatic couscous	Glass red wine or grape juice
Red grape and pomegranate juice	Fruit salad with coconut cream
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
or herb tea	or herb tea
Notes:	





Day 9	Day 10
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Spinach basil and tomato omelette	Grapefruit
Filter coffee	Boiled egg and wholegrain toast
Water	Filter coffee
Mid am	
Flaxseed cracker with peanut butter	Get up and Go smoothie
Green Tea	Handful mixed nuts and sunflower seeds



Dark Chocolate - 1 block	
Lunch	
Bean and brown rice salad	Veggie Pocket Pita with humus
Turmeric smoothie	Fruit
Handful mixed nuts and sunflower seeds	Coffee or tea
	Water
Mid afternoon	
Fruit and seeds	Turmeric smoothie
Lemon or berry sorbet	Dark Chocolate - 1 block
Dinner	
Veggie Sushi	Chicken Stew and Aromatic Couscous



Fruit salad & coconut cream	Avocado and carob mousse
Glass red wine or grape juice	Glass red wine or grape juice
hour before bed	
1 Fruit - banana	1 Fruit - banana
Notes:	



Day 11	Day 12
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Oat and strawberry porridge	Greek yogurt berries & walnuts
Filter coffee	Muffin
Water	Filter coffee
	Water
Mid am	
Whole grain crackers	Turmeric smoothie



cottage cheese	Handful mixed nuts and sunflower seeds
Fruit smoothie	
Lunch	
Veggie Pita Pockets and salad	Chicken salad
Carrot and veggie juice	Fruit
Water	Green / herb tea
	Water
Mid afternoon	
Handful mixed nuts and sunflower seeds	Green power smoothie
Green Tea	Nuts and seeds
Dark Chocolate - 1 block	



Dinner	
Grilled fish with roasted vegetables	Spicy Chickpea Salad
Fresh fruit and nuts	Glass red wine or grape juice
Red grape and pomegranate juice	Fruit salad with coconut cream
hour before bed	
1 Fruit - banana	1 Fruit - banana
Notes:	



Day 13	Day 14
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Papaya with lemon	Grapefruit
Flaxseed cracker with peanut butter	Boiled egg and wholegrain toast
Filter organic coffee	Filter organic coffee
Water	Water
Mid am	
Flaxseed cracker with peanut butter	Get up and Go smoothie



Green Tea	Handful mixed nuts and sunflower seeds
Dark Chocolate - 1 block	
Lunch	
Falafel and salad	Veggie Pita Pocket with humus
turmeric smoothie	Fruit
Fruit	Coffee or tea
	Water
Mid afternoon	
Handful mixed nuts and sunflower seeds	Berry and veg smoothie
Lemon or berry sorbet	Dark Chocolate - 1 block
Dinner	



Lamb Pitass with Tzatziki Sauce	Chicken and Stir fried veggies
Fruit salad & coconut cream	Avocado and carob mousse
Glass red wine or grape juice	Glass red wine or grape juice
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
or herb tea	or herb tea
Notes:	



Day 15	Day 16
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Oats and strawberry porridge	Greek yogurt berries & walnuts
Filter Coffee	Muffin
Water	Filter Coffee
	Water
Mid am	
Whole grain crackers	Turmeric smoothie



peanut butter & honey	Handful berries and seeds
Fruit smoothie	
Lunch	
Spicy chickpea salad	Chicken salad
Carrot and veggie juice	Fruit
Water	Green / herb tea
	Water
Mid afternoon	
Handful mixed nuts and seeds	Green power smoothie
Green Tea	Nuts and seeds
Dark Chocolate - 1 block	



Dinner	
Chicken Stew and Aromatic Couscous	Roasted veggie pizza
Fresh fruit and nuts	Glass red wine or grape juice
Red grape and pommegranate juice	Berry sorbet with choc berry sauce
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
or herb tea	or herb tea
Notes:	



Day 17	Day 18
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Grapefruit	Papaya with lemon
Boiled Egg & whole grain toast	Flaxseed cracker with peanut butter
Filter coffee	Filter coffee
Mid am	
Handful mixed nuts and seeds	Turmeric smoothie
Green Tea	Handful mixed nuts and sunflower seeds
Dark Chocolate - 1 block	



Lunch	
Salmon and Berry Sauce	Greek Chicken Pitas
Steamed vegetables	Garlic sauce
Turmeric smoothie	Green Salad
	Berry and veg smoothie
Mid afternoon	
Handful mixed berries	Handful mixed berries or Berry smoothie
Dinner	
Chick pea Salad	Portion brown wild rice
Avocado and carob mousse	Chopped fresh vegetables
Glass red wine	Humus



	Apple cider vinegar and olive oil dressing
	Glass red wine
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
Notes:	



Day 19	Day 20
First thing	
Water with a dash of lemon - hot or cold	Water with a dash of lemon - hot or cold
Breakfast	
Get up and Go Smoothie	Oats with berries
Muffin	Coconut cream



Filter coffee	Filter coffee
Mid am	
Handful mixed nuts and sunflower seeds	Turmeric smoothie
Green Tea	Handful mixed nuts and sunflower seeds
Dark Chocolate - 1 block	
Lunch	
Veggie Pita Pockets and salad	Lamb Pita Pockets with roasted veggies
Turmeric smoothie	Fruit smoothie
Mid afternoon	
Dinner	
Chicken Stew	Quinoa and Bean salad



Wild Brown Rice	Fruit Salad
Red grape and pomegranate juice	Glass red wine or grape juice
hour before bed	
1 Fruit - banana	1 Fruit - banana
Hot cocoa and cinnamon drink	Hot cocoa and cinnamon drink
Notes:	



Day 21
First thing
Water with a dash of lemon - hot or cold
Breakfast
Poached egg
Curry sauce
Muffin
Mid am
Handful mixed nuts and seeds
Green Tea
Dark Chocolate - 1 block



Lunch
Veggie sushi
Berry smoothie
Mid afternoon
Handful mixed berries
Dinner
Chick pea Salad
Avocado and carob mousse
Glass red wine



hour before bed
1 Fruit - banana
Hot cocoa and cinnamon drink
Notes:

Recipes

Turmeric Smoothie Recipe

Ingredients

- 1 cup coconut milk
- 1/2 cup frozen pineapple or mango chunks
- 1 fresh banana
- 1 tablespoon coconut oil
- 1 teaspoon turmeric (can be increased to 1 tsp)
- 1/2 teaspoon cinnamon
- 1/2 teaspoon ginger
- 1 teaspoon chia seeds (optional)
- 1 teaspoon maca (optional)


Method

Place all these ingredients into a blender and then you're done. Super energizing and powerful health meal

Berry 'get up and go' Smoothie Recipe

- 1/2 cup frozen pineapple
- 1 medium beetroot
- 1 red apple
- 1/2 cup chopped celery
- 1 cup water

Method



Place all these ingredients into a blender and then you're done. Super energizing and powerful health meal

Chickpea and Carrot Salad

Ingredients

Chickpeas

- 1 ½ cups cooked chickpeas
- ½ teaspoon ground cumin
- ½ teaspoon cayenne pepper
- ¼ teaspoon fine sea salt
- Pinch of cinnamon
- 1 teaspoon olive oil

Salad

- 3 cups grated carrots
- ½ cup raisins
- ½ diced red onion
- 1 cup finely chopped parsley
- Salt and pepper to taste


Tahini Dressing

- ¼ cup fresh lemon juice
- ¼ cup tahini
- 1 clove garlic – crushed
- 2 tablespoons extra virgin olive oil

1 teaspoon honey

- 1/8 teaspoon cayenne pepper
- ½ teaspoon salt
- 2 tablespoons finely chopped parsley
- Water to thin mixture if needed

Method



Preheat oven to 425° F. Combine the chickpeas with spices and oil. Lay them in a single layer on a baking tray and baked until slightly browned and crisp for about 15 – 20 minutes. Turn the chickpeas a few times whilst cooking.

Whisk together all the dressing ingredients until smooth and adjust seasoning as required. If the mixture is too thick add water until the desired consistency is reached.

Toss all the salad ingredients together in a bowl with the dressing. Add the chickpeas just before serving. Leftovers can be stored in the fridge for up to 5 days

Simple Chickpea Salad

Ingredients

Chickpeas

- 1 ½ cups cooked chickpeas
- ½ teaspoon ground cumin
- ¼ teaspoon cayenne pepper
- ¼ teaspoon fine sea salt
- 1 teaspoon olive oil
-

Salad

- 1 Large cauliflower head
- 1 ½ cups cherry tomatoes – sliced in half
- ½ diced red onion
- 1/3 cup diced kalamata olives
- 1 finely chopped English cucumber
- 1 finely chopped parsley
- ¼ teaspoon crushed red pepper flakes
- Salt and pepper to taste

Lemon Dressing

- 2 tablespoons fresh lemon juice
- ½ teaspoon Dijon mustard

- 1 clove garlic – crushed
- ½ teaspoon salt
- ¼ teaspoon extra virgin olive oil

Method

Preheat oven to 400° F. Combine the chickpeas with spices and oil. Lay them in a single layer on a baking tray and baked until slightly browned and crisp for about 35 – 40 minutes. Turn the chickpeas halfway through cooking time.

For the dressing, combine lemon juice, mustard, garlic and salt in a bowl. Drizzle in olive oil while whisking together. Season according to taste and then set it aside.

Crumble the cauliflower finely into a large bowl. Add the remaining salad ingredients and toss well. Drizzle the dressing evenly over the salad and season with salt and pepper. Finally add the roasted chick peas and serve. Recipe caters for 4 servings.

Veggie Pita Pockets

Ingredients

- 1 whole wheat pita sliced in two
- ¼ cup hummus
- ¼ shredded carrots
- Handful washed baby spinach
- ¼ cup chickpeas
- 2 tablespoons crumbled feta cheese
- 2 teaspoons chopped sundried tomatoes
- 2 teaspoons chopped Kalamata olives
- Salt and Pepper to taste

Method

Spread hummus inside each pita pocket. Divide the rest of the ingredients between the two pockets. This simple meal can be changed by adding other vegetables to replace carrots and chickpeas. It will taste just as wonderful. Adding lightly grilled sliced chicken with peanut butter, cayenne pepper is also a delicious alternate version.



Homemade Hummus

Ingredients

- 2 cups chickpeas
- 2 tablespoons tahini (sesame seed butter)
- 2 tablespoons lemon juice
- 3 tablespoons olive oil
- 1 clove garlic
- Salt and pepper to taste

Method

Soak chickpeas overnight the drain and rinse before boiling for 45 minutes until soft. Drain the liquid into a separate container. Place all ingredients into a blender with ½ to 1 cup of the cooking liquid to create a smooth consistency. Add paprika and a little olive oil to garnish.

Sun-dried tomato hummus

Ingredients

- 1 ½ cups chickpeas
- ¾ cup sun-dried tomatoes in oil that has been drained
- ¾ cup filtered water
- 2 tablespoons tahini (sesame seed butter)
- 1 tablespoon lemon juice
- 1 tablespoon olive oil
- 2 clove garlic cloves – crushed
- Salt and ground black pepper to taste
-

Method

Soak chickpeas overnight the drain and rinse before boiling for 45 minutes until soft. Drain the liquid into a separate container. Place all ingredients into a blender with the water to create a smooth consistency. After tasting adjust seasoning to suit your



palate and enjoy. The hummus can be stored in the fridge for 2 days in an airtight container.

Green Olive Tapenade

Ingredients

- 2 cups green olives, pitted and chopped
- ¼ cup almonds
- ¼ cup olive oil
- 2 crushed garlic cloves
- 1 tablespoon freshly chopped rosemary leaves

Method

Put all ingredients into a blender and blend until smooth. Place in an airtight container and store for up to one week in the fridge. This can be made with Kalamata olives and a little chilli added for a variation.

Chicken Stew

Ingredients

- 2 tablespoons olive oil
- 1 medium chopped red onion
- 1 crushed clove of garlic
- 2 teaspoons dried oregano
- 1 large can crushed Italian tomatoes
- 1 can rinsed and drained chickpeas
- 1 cup chicken broth
- 2 bay leaves
- Pepper to taste
- 1 cooked chicken - skinned and cut into bite sized pieces
- ½ cup Kalamata olives – chopped
- 1 tablespoon freshly squeezed lemon juice
- 1 tablespoon flaked almonds



Method

Heat olive oil and cook onion until softened for about 5 minutes. After adding garlic and oregano, continue to cook for 1 minute. Pour in the remaining ingredients except the chicken and after bringing up to boiling point, cook for another 5 minutes. Finally add the chicken pieces and simmer for 10 minutes.

To make the cous cous, heat the chicken broth, oil and salt until boiling. Add cous cous and raisins and stir for 1 minute then remove from the heat and cover. After 5 minutes the liquid should have been absorbed by the cous cous. Toss the couscous and add cinnamon and orange juice using a fork to mix the ingredients properly.

Remove the stew from the heat and add olives and lemon juice. Serve hot over the couscous with almonds sprinkled over the top. Other dried fruits like apricot and currents can be chopped and added to the cous cous to add variety to this dish. It serves four and is delicious.

Bean Salad

Ingredients

- ½ cup fresh string beans cut into small pieces and blanched in salt water
- ½ cup of each bean – Black beans, adzuki beans, cannellini beans & chickpeas
- (Soak overnight. Then drain and boil for 45 – 60 minutes until soft)
- 2 diced red bell peppers
- 2 red onions – diced
- 1 tablespoon cumin
- Salt & pepper to taste
- Olive oil

-

Method

Saute onions and cumin in olive oil till translucent then add bell peppers and cook for 5 minutes then remove from heat. Put the beans, onions and peppers in large bowl with salt and pepper. Lastly add olive oil to complete your delicious bean salad.

Greek Chicken Pitas

Ingredients

Chicken Marinade

- 1 large skinless chicken breast
- ½ cup greek yoghurt
- 2 tablespoons of olive oil
- 1 teaspoon dried oregano
- ½ teaspoon salt
- Freshly ground black pepper to taste

Chicken recipe ingredients

- 2 tablespoons of olive oil
- 2 crushed garlic cloves
- 1 diced tomato
- ½ diced cucumbers
- Pita pocket

Greek sauce

- 4 tablespoon mayonnaise
- 1 tablespoon coconut milk
- 1 tablespoon apple cider vinegar
- ¾ teaspoon sugar
- 1 teaspoon garlic powder
- Squeeze of lemon juice
- ¼ teaspoon salt and plenty of freshly ground black pepper to taste



Method

Marinate diced chicken cubes in a bowl with all ingredients briskly whisked until combined. You need at least 2 hours but overnight is better if possible.

Mix all the Greek sauce ingredients together and refrigerate.

Remove chicken pieces from the marinade and sauté with garlic and oregano and cook for 5 -6 minutes or until chicken is cooked through.

Cut pita in half. Mix cooked chicken with as much garlic sauce as required and place inside pita pockets. Serve with Italian salad made with lettuce tomato onion feta and avocado drizzled with a little olive oil and lemon. Season to taste.

Lamb Pita Pockets

Ingredients

Mint Tzatziki Dip

- $\frac{3}{4}$ cup Greek yoghurt
- $\frac{1}{2}$ cup peeled and grated cucumber
- 1 tablespoon chopped fresh mint
- 2 tablespoons fresh lemon juice
- $\frac{1}{4}$ teaspoon salt
- 2 cloves crushed garlic

Lamb Pitas

- 4 whole wheat pita pockets
- 2 cups shredded lettuce (Romaine is a good choice)
- 1 $\frac{1}{2}$ cups chopped roasted lamb leftovers – can use falafels or chicken cooked and shredded
- $\frac{3}{4}$ cup chopped tomato
- $\frac{1}{2}$ cup finely sliced red onion



Method

Mix all dip ingredients and put aside. Open the pita in half and gently fill with lettuce, tomato, lamb and onion. Serve with Mint dip. This recipe serves 4 portions.

Avocado and Carob Mousse

Ingredients

- 2 Avocados,
- 2 tbs. honey
- 1/3 cup carob powder
- 1 tbs. coconut oil
- ½ tsp vanilla extract
-

Method

Place avocado flesh into a blender and add the rest of the ingredients and blend until silky smooth.

Chill in the refrigerator for at least an hour. Serve with garnishing of mint leaf. The mousse will last in the refrigerator for up to 2 days.

Brown Lentil soup with Swiss Chard

Ingredients

- 1 3/4 cups dried brown lentils
- 2 quarts water
- 1 cup diced carrot
- 1 3/4 teaspoons sea salt
- ¼ teaspoon of dried thyme
- 2 garlic cloves - crushed
- 2 parsley sprigs
- 2 bay leaves

- 2 tablespoons coconut oil
- 3 cups chopped onion
- 1 teaspoon ground cumin
- 6 cups sliced Swiss chard
- 1 tablespoon fresh lemon juice
- 1/2 teaspoon freshly ground black pepper
- 6 tablespoons plain Greek yogurt

Method

Wash the lentils. Combine the lentils, water, carrots seasonings, garlic, parsley and bay leaves. After its reached boiling point then cover pot, reduce heat, and simmer for 45 minutes or until tender. Melt coconut oil in a large nonstick pan over medium-high heat. Add the onion and cumin; sauté for 10 minutes or until browned. Stir onion mixture into lentil mixture. Discard bay leaves and parsley. Add chard to soup, simmer, uncovered for 10 minutes or until chard is tender. Remove soup from heat. Stir in juice and pepper. Top each serving with 1 tablespoon yogurt.

Chocolate Berry Smoothie

Ingredients

- 1 cup frozen Blueberries
- 2 teaspoons cocoa powder
- 1 cup coconut milk
- ¼ teaspoon vanilla essence
- Pinch of cinnamon
- 2 teaspoons honey

Method

Place all ingredients into a blender and blend until smooth – enjoy!



Savory Berry Sauce and Grilled Salmon

Ingredients

- 1 tablespoon olive oil
- 1 garlic clove, thinly sliced
- 1/4 teaspoon salt
- 1/4 teaspoon chopped fresh thyme
- 1 cup fresh blueberries
- 1/4 cup water
- 1 tablespoon balsamic vinegar
- 4 salmon steaks / fillets with skin (each about 3/4 inch thick)
- 3 tablespoons thinly sliced fresh mint

Method

Heat 1 olive oil, garlic, salt and thyme. Stir until fragrant, about 30 seconds then add blueberries, water and vinegar. Stir to blend. Mash berries while cooking until sauce thickens, stirring often, for 3 - 4 minutes. Season with freshly ground black pepper and remove from heat.

Brush salmon on both sides with olive oil; sprinkle with salt, thyme and black pepper.


Grill salmon for 4 to 5 minutes per side. Transfer to plates. Stir 2 tablespoons sliced mint into warm blueberry sauce. Spoon the sauce over the salmon and sprinkle with remaining mint. Serve immediately. Recipe serves four.

Raw Sushi

Yields: 4 rolls of 8 pieces

Ingredients

- 4 Large Nori sheets
- Cauliflower Rice (see below)
- 1 avocado sliced
- 1/3 cucumber sliced
- 4 asparagus spears



Coconut amino (or organic fermented soy sauce). Wasabi paste
Pink Ginger

To assemble sushi, lay one sheet of nori and cover with a thin layer of cauliflower “rice” being careful to leave few cm border on just one side of the nori. Then, lengthwise on top of the “rice” lay the avocado and cucumber slices/ Place the asparagus spears in a line down the middle. Feel free to combine different ingredients as the mood takes you – be creative!

Carefully pick up the opposite end to the clear border of the rice and begin to roll over the ingredients, tugging tightly as you roll to keep the roll free of gaps in the middle. Continue to roll until hitting the border free of “rice” and squeeze the roll gently all along the length of it, shaping it round. “Glue” the border free of rice to the ready roll. Nori should be a little bit moist because of the cauliflower “rice”. However if nori won’t stick, you can moist the nori a bit with your fingers dipped in water.

Then, with a very sharp knife carefully cut the roll in half. Then cut each half in half again and once more cut the four pieces in half resulting in 8 small pieces. Arrange the pieces on a plate and serve with ginger, Wasabi and coconut amino / Braggs amino acids or quality non GMO soy sauce.

Raw Cauliflower “rice”

- 1/2 head of a cauliflower
- 1 tbsp raw Tahini
- 1 tsp seasoned apple cider vinegar
- 1/2 tsp pink Himalayan salt or sea salt

Method

Combine all ingredients into a food blender and blend until smooth.

Appendix 1

FDA Approved drugs for Dementia & Alzheimer's Disease

DRUG NAME	DRUG TYPE AND USE	HOW IT WORKS	COMMON SIDE EFFECTS
Aricept® (donepezil)	Cholinesterase inhibitor prescribed to treat symptoms of mild, moderate, and severe Alzheimer's	Prevents the breakdown of acetylcholine in the brain	Nausea, vomiting, diarrhea, muscle cramps, fatigue, weight loss
Exelon® (rivastigmine)	Cholinesterase inhibitor prescribed to treat symptoms of mild to moderate Alzheimer's (patch is also for severe Alzheimer's)	Prevents the breakdown of acetylcholine and butyrylcholine (a chemical similar to acetylcholine) in the brain	Nausea, vomiting, diarrhea, weight loss, indigestion, muscle weakness
Namenda® (memantine)	N-methyl D-aspartate (NMDA) antagonist prescribed to treat symptoms of moderate to severe Alzheimer's	Blocks the toxic effects associated with excess glutamate and regulates glutamate activation	Dizziness, headache, diarrhea, constipation, confusion



Namzaric® (memantine extended- release donepezil) and	NMDA antagonist and cholinesterase inhibitor prescribed to treat symptoms of moderate to severe Alzheimer's (for patients stabilized on both memantine and donepezil taken separately)	Blocks the toxic effects associated with excess glutamate and prevents the breakdown of acetylcholine in the brain	Headache, nausea, vomiting, diarrhea, dizziness
Razadyne® (galantamine)	Cholinesterase inhibitor prescribed to treat symptoms of mild to moderate Alzheimer's	Prevents the breakdown of acetylcholine and stimulates nicotinic receptors to release more acetylcholine in the brain	Nausea, vomiting, diarrhea, decreased appetite, dizziness, headache

DRUG NAME	MANUFACTURER'S RECOMMENDED DOSAGE	FOR MORE INFORMATION
Aricept® (donepezil)	<ul style="list-style-type: none">• Tablet*: Initial dose of 5 mg once a day• May increase dose to 10 mg/day after 4-6 weeks if well tolerated, then to 23 mg/day after at least 3 months• Orally disintegrating tablet*: Same dosage as above• 23-mg dose available as brand-name tablet only	For current information about this drug's safety and use, visit www.aricept.com/prescribing-and-patient-info .
Exelon®	<ul style="list-style-type: none">• Capsule*: Initial dose of 3 mg/day (1.5 mg twice a	For current information about



(rivastigmine)	<ul style="list-style-type: none">day)• May increase dose to 6 mg/day (3 mg twice a day), 9 mg (4.5 mg twice a day), and 12 mg/day (6 mg twice a day) at minimum 2-week intervals if well tolerated• Patch*: Initial dose of 4.6 mg once a day; may increase dose to 9.5 mg once a day and 13.3 mg once a day at minimum 4-week intervals if well tolerated	this drug's safety and use, visit the www.fda.gov/Drugs . Click on "Drugs @ FDA," search for Exelon, and click on drug-name links to see "Label Information."
Namenda® (memantine)	<ul style="list-style-type: none">• Tablet*: Initial dose of 5 mg once a day• May increase dose to 10 mg/day (5 mg twice a day), 15 mg/day (5 mg and 10 mg as separate doses), and 20 mg/day (10 mg twice a day) at minimum 1-week intervals if well tolerated• Oral solution*: Same dosage as above• Extended-release capsule: Initial dose of 7 mg once a day; may increase dose to 14 mg/day, 21 mg/day, and 28 mg/day at minimum 1-week intervals if well tolerated	For current information about this drug's safety and use, visit www.namenda.com and www.namendaxr.com . See "Full Prescribing Information."
Namzaric® (memantine extended-	<ul style="list-style-type: none">• Capsule: 28 mg memantine extended-release + 10 mg donepezil once a day	For current information about this drug's safety and use, visit www.namzaric.com . Click on "Full Prescribing Information" to see



release and donepezil)	<ul style="list-style-type: none">• 14 mg memantine extended-release + 10 mg donepezil once a day (for patients with severe renal impairment)	the drug label.
Razadyne® (galantamine)	<ul style="list-style-type: none">• Tablet*: Initial dose of 8 mg/day (4 mg twice a day)• May increase dose to 16 mg/day (8 mg twice a day) and 24 mg/day (12 mg twice a day) at minimum 4-week intervals if well tolerated• Extended-release capsule*: Same dosage as above but once a day	For current information about this drug's safety and use, visit www.janssenmd.com/razadyne . Click on "full Prescribing Information" to see the drug label.

*Available as a generic drug.

Alzheimer's Disease Education and Referral (ADEAR) Center
A Service of the National Institute on Aging

National Institutes of Health
U.S. Department of Health and Human Services

Published August 2016

Publication Date: August 2016
Page Last Updated: August 30, 2016

Appendix 2 –

The Glycemic Index


LOW GLYCEMIC INDEX (Less Than 55)

Fruits

Apples	38
Apple juice	40
Apricots, dried	31
Bananas	54
Blueberries	25
Cherries	22
Coconut	45
Cranberries	45
Cranberry juice	50
Figs, dried	40
Grapefruit	25
Grapes	46
Orange juice	53
Oranges	44
Peaches	42
Pears, fresh	53
Plantains, raw	45
Plums	55
Strawberries	41

Vegetables

Artichokes	20
Asparagus	15
Bamboo shoots, raw	20



Beet greens	20
Broccoli	15
Broccoli rabe	10
Brussel sprouts	15
Butternut squash, baked	50
Cabbage, Chinese	10
Cabbage, savoy, boiled	15
Carrot juice	45
Carrots, raw	47
Cauliflower	15
Celery	15
Collard greens	20
Corn, sweet	54
Cucumber	15
Eggplant	15
Garlic	30
Green beans	15
Hubbard squash, baked	50
Kale	15
Leeks	15
Lettuce	15
Lima beans, baby, frozen	46
Okra, raw	15
Olives	15
Onions	15
Peppers	15
Pickles, dill	15
Turnip greens, boiled	10
Turnips, boiled	30
Snow peas	15
Summer squash	15
Tomato soup	54
Tomatoes	15
Spinach	15
Summer squash	15

Tomato soup	54
Tomatoes	15
Watercress	10
Zucchini	15

Grains, Breads & Cereals

Banana bread	47
Barley	25
Basmati rice	50
Bran cereal	42
Brown rice	50
Bulgur wheat, whole, cooked	45
Chickpeas	33
Fettuccine	32
Matzo bread	40
Quinoa	53
Ravioli, meat	39
Rice bran	27
Rice, parboiled	47
Spaghetti, protein enriched	38
Spaghetti, whole meal	53
Spaghetti, whole wheat	37
Tortellini, cheese	50
Vermicelli	35

Dairy and Dairy Alternatives

Chocolate milk	32
Skim milk	32
Soy milk	43
Yogurt, low fat, artificially sweetened	15
Yogurt, low fat, fruit, sugar sweetened	46
Yogurt, plain	14

Nuts and Legumes

Almonds	15
Black Beans	30



Broad beans	40
Butter beans	43
Cashews	23
Chickpeas	33
Fava beans	40
Horse beans	40
Kidney beans	41
Navy beans	54
Peanuts	14
Pinto bean	39
Soybeans, boiled	16
Split peas, yellow, boiled	45

Snacks & Sweets

Honey	55
Hummus	6
Power Bar	53
Snickers	41
Strawberry jam	51

MEDIUM GLYCEMIC INDEX (between 56 and 69)

Fruits

Apricots, canned with light syrup	64
Apricots, fresh	57
Cantaloupe	65
Fruit cocktail	55
Grapes	66
Mango juice, unsweetened	55
Mangoes	56
Oranges	63
Orange juice	55
Papaya, fresh	55
Peaches, fresh	60
Peaches, canned	67
Pineapple	59



Raisins	64
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Vegetables

Marrowfat peas, dried	56
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Peas, green	68
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Sweet potato	61
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Grains, Breads & Cereals

All-Bran	60
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Bulgur	68
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Couscous	65
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Hamburger bun	61
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Instant noodles	67
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Instant porridge	66
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Lasagna	60
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Linguine	65
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Macaroni and cheese	64
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Mixed grain bread	69
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Oat bran bread	68
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Oatmeal, plain	58
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Pancakes	60
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Pita bread	57
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Quick-cooking porridge	65
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Rye crisp-bread	65
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Rye kernel bread	66
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Spaghetti, white	59
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Taco shells	68
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Wheat kernels	59
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Whole-white bread	67
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Wild rice	57
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Dairy and Dairy Alternatives

Mayonnaise	60
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Nuts and Legumes

Black-eyed peas	59
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Chestnuts	60
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Lentil soup, canned	63
Pinto beans, canned	64

Snacks & Sweets

Blueberry muffin	59
Bran muffin	60
Coca-Cola	63
Ketchup	55
Mustard	55
Nutella	55
Pizza, cheese	63
Sponge cake	66
Sushi	55

HIGH GLYCEMIC INDEX (70 and higher)

Fruits


Dates	103
Kiwifruit	75
Watermelon	72

Vegetables

Parsnips	139
Pumpkin	107
Rutabaga	103
Potato, instant	121
Potato, mashed	100
Potato, microwaved	117
Potato, white, baked	85

Grains, Breads & Cereals

Bagel	72
Bagel, white	103
Barley flour bread	95
Bran buds	77
Bran Chex	83
Bread stuffing	106
Cheerios	106



Cocoa Pops	79
Corn Flakes	81
French baguette	136
French bread	95
Gluten-free bread	90
Gnocchi	95
Golden Grahams	102
Grape Nuts	75
Hamburger bun	87
Kaiser roll	104
Life cereal	94
Muesli	80
Muesli bars	87
Oat kernel bread	93
Oatmeal	87
Pita bread, white	82
Pumpernickel bread	71
Rice cakes	82
Rice Chex	127
Rice Krispies	117
Rice, brown	79
Rice, instant	128
Rice, white	83
Rye flour bread	92
Shredded Wheat	75
Special K	77
Tapioca, boiled with milk	115
Total	109
Water crackers	102
Waffles	109
Wheat bread	97
White bread	70

Dairy and Dairy Alternatives

Ice cream, full-fat	87
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Ice cream, low-fat	71
Tofu, frozen dessert, non-dairy	164

Nuts and Legumes

Black bean soup	92
Green pea soup, canned	94
Kidney beans, canned	74
Lentils, canned	74
Split pea soup	86

Snacks & Sweets

Cake, angel food	95
Cake, pound	77
Corn chips	105
Corn syrup	90
Croissant	96
Doughnuts	108
French fries	75
Gatorade	78
Glucose	138
Graham crackers	74
Jelly beans	80
Life Savers	70
Maltodextrin	95
Maltose	152
Nutri-Grain bar	94
Oatmeal cookies	79
Pastry	84
Popcorn	72
Pretzels	83
Shortbread	91
Stoned Wheat Thins	96
Sugar, table	89
Vanilla wafers	110

<http://universityhealthnews.com/daily/nutrition/glycemic-index-chart/>

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