

Repair, Refocus and Recharge Your Brain

By Dr. Al Sears, MD



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Wellness Research and Consulting, Inc.
11903 Southern Blvd., Suite 208
Royal Palm Beach, FL 33411
561-784-7852
www.AISearsMD.com

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Introduction

Aging may be inevitable, but did you ever notice that some people who are very elderly are still quick-witted and sharp as a tack, with keen memories and focus?

I've been studying this for 30 years, and I figured out something important about why some people keep getting better with focus and clarity, even at 100. In fact, I've worked with patients 109 years old who were still on the ball and smart as a whip.

Today I'm going to tell you how you can become one of those people.

I'm Dr. Al Sears. In my experience with anti-aging medicine over the last 30 years there have been plenty of things my patients worry about: looks, vision, strength, sexual potency, and so on.

But the hands down number one thing more people are concerned with over and above anything else is the decline of their brain.

The good news is, you can sidestep all of those worries. No more fogginess. No loss of memory. You can keep the same level of mental energy and focus you've always had – and improve it.

How can you join the group of quick minded people who are getting better as they get older?

It's easy. Just follow these seven steps and you can recharge, repair and refocus your brain. And when you do, you won't have to be concerned any more about losing the mental power you've enjoyed your whole life.

In fact these simple steps will help you unleash your full powers of attention, concentration, and memory to give you the confidence to do what you want, when you want, without worry.

Chapter 1

Stay Away From The Brain-Busters

First, there are a few things you should avoid at all costs if you want to get the most out of your brain for as long as possible.

1. Irradiated Foods: U.S. food processors are allowed to irradiate beef, eggs, poultry, oysters, fresh spinach, iceberg lettuce and even spices. The government and food safety officials tout irradiation as the very latest in consumer protection.

They tell you they're killing off any harmful bacteria and preventing contamination in your wholesome, fresh foods.

It sounds good, right?

But agribusiness treats it as a license to go ahead and raise and process food under filthy conditions because they're going to nuke it anyway.

Then they sell you foods that you would never otherwise eat, including spoiled fish, meat and eggs from

Foods Permitted to be Irradiated (no matter the cost to your health)

- ✓ Fresh, non-heated processed pork
- ✓ Fresh foods
- ✓ Dry or dehydrated Enzyme preparations
- ✓ Dry or dehydrated spices/seasonings
- ✓ Fresh or frozen, uncooked poultry products
- ✓ Refrigerated, uncooked meat products
- ✓ Frozen uncooked meat products
- ✓ Fresh shell eggs
- ✓ Seeds for sprouting
- ✓ Fresh or frozen molluscan shellfish
- ✓ Fresh iceberg lettuce and fresh spinach

sick animals, spices that contain animal droppings and insect parts... and so on.

Irradiation also destroys nutrients and kills off friendly bacteria and enzymes, making some irradiated foods useless to your body.

What's worse is that radiation breaks up the molecular structure of the food – and the packaging it comes in, which is also allowed to be irradiated – and creates a whole new set of chemicals known as “unique radiolytic products” (URPs).

These URPs include chemicals such as benzene and formaldehyde, and a host of known mutagens and carcinogens that you don't want anywhere near your brain.

Numerous studies show eating irradiated foods can cause problems as wide-ranging as polyploidy (associated with brain tumors) and demyelination (the loss of the protective sheath around nerves that is associated with memory problems and a slowdown of brain signals).

Foods that are irradiated must be labeled with the words “treated with radiation” or “treated by irradiation.” They also have to have the international symbol for irradiation (at right) on the packaging, so avoid these products.

For now, you can sidestep irradiation by choosing locally grown, organic foods as much as possible. Certified organic foods are not allowed to be irradiated, and foods from a small, local farm are unlikely to be, either. Get to know your local farmers and the growers who supply your local farmers' markets.



Steer clear!
The “radura” symbol means a food has been irradiated.

2. Trans-fats: Your brain is fighting a battle never encountered in the thousands of years of evolutionary development before you. Just in the last 100 years, we've changed the kind of fats we eat, and not for the better.

You see, your body uses naturally good fatty acids like omega 3s to build the specialized cells that let you think and feel. Today, instead of eating foods rich in these good fats, we are fed processed foods that contain man-made trans-fatty acids instead.

Foods with hydrogenated or partially hydrogenated oils – trans fats – disrupt communication in your brain. To make it, manufacturers heat assorted vegetable oils to extremely high temperatures to change their molecular structure. Then, they add brain-busting metals like nickel or aluminum, plus hydrogen atoms, to make it a solid mass.

By modifying natural fats, we have altered the basic building blocks of the human brain – weakening the brain's architecture. Like an unstable building in the wind, eating trans-fats will leave your brain unable to cope with the mounting speed and stress of modern life.

Steer clear of the inner aisles of the grocery store where all the processed food is on display. This is where most of the foods with brain-robbing trans fats will be. Your brain needs natural fats like omega-3 and saturated fats to be able to bring in nutrients and stay its sharpest.

3. Artificial sweeteners: Aspartame – the active ingredient in NutraSweet – was classified as a neurotoxin (a poison that specifically damages neurons in the brain) before it was approved by the FDA as a sugar substitute in the early 1980s.

That's because it and other sweeteners like it are “excitotoxins.” They “excite” or stimulate the cells in your brain to death.

These artificial sweeteners can give you any one of over a hundred adverse reactions, including seizures,

memory loss, headaches, slurred speech and chronic fatigue.

The threat of seizures and vertigo is so strong, pilots are routinely warned about the dangers of aspartame. Both the Air Force's magazine *Flying Safely* and the Navy's publication *Navy Physiology* have published articles warning pilots of these side effects.¹

There are a few good sugar alternatives you can find if you want a sweetened drink without the calories. You can find stevia, the extract from a plant native to South America, that's 300 times sweeter than sugar. It's available in stores as a dietary supplement.

Erythritol has a chemical-sounding name, but it's really just a type of sugar alcohol, or *polyol* which occurs naturally in fruits and vegetables. It's easy to digest, yet it's not metabolized by your body. That means it's blood sugar friendly.

Erythritol also has another benefit... it's an antioxidant. Studies show it has a protective effect against oxidative stress on the lining of your blood vessels.² That helps you keep strong blood flow and a steady stream of fuel and oxygen to your brain

4. Statin drugs: The latest research shows that these drugs designed to lower cholesterol can also harm your brain.

A New study from the University of Pittsburgh found that statins lower mental performance. In the study, patients taking Zocor didn't perform as well on mental tests. They experienced a loss of attention span, memory and overall mental efficiency that they didn't suffer before they started Zocor. And this wasn't the first time...

In another trial involving the statin Mevacor, users experienced the same mental deficiencies. How? Statins alter the way you metabolize fat. Your brain is 60% fat. It needs normal fat metabolism for maintenance and performance. It's no surprise that without it, your memory starts slipping.

The FDA and doctors have also closed their eyes to other dangerous side effects of these drugs. The list is long and frightening. **Here are just the ones that affect your brain:**

- Inability to concentrate
- Amnesia
- Confusion or disorientation
- Nerve pain
- Depression and mood disorders
- Mental fatigue
- Weakened immune system

The first thing I do with patients who come to me on statin drugs is to have them stop taking them right away. Cholesterol is a normal and important part of your anatomy. You need your cholesterol, especially for making brain cell membranes. And for making, the protective sheath that surrounds the nerve cells in your brain and makes you able to think fast and have quick reactions.

A better solution is to raise your HDL as high as you can. Work out for brief, intense periods of exertion, have one drink of alcohol a day, eat some garlic, and take niacin and a spoonful of cod liver oil each day and you'll have healthy levels of brain-boosting cholesterol in a few weeks.

With those four brain-busters out of the way let's focus on what you can eat that will help you recharge your mental energy and put your brain in the fast lane.

Chapter 2

Supercharge Your Brain By Eating The Foods You Crave

Your brain needs energy to keep going all day every day – even when you sleep. If you feed it properly, you can deliver a steady stream of nutrients and energy to your brain that give you better recall and better concentration.

One of the best things you can do for yourself is not only to eat the right foods but avoid eating things that drag down brain performance.

It's an excellent strategy for enhancing your cognitive abilities, protecting your brain from damage and counteracting the effects of aging.

Beneficial foods include those high in antioxidants like vitamin C and vitamin E. That's because oxidation causes an age related decline in mental functions.

Fish is also truly brain food, and I'll tell you more about the nutrients in fish a little later on. But there are other foods that improve your brain and can help give you more energy and focus:

- **A special kind of fat is essential for building a better brain.** The healthy omega-3 fats like you get from fish help build your brain cells. But there's another kind of fat that's very rare, and has great benefits for your brain. They're called medium chain fatty acids (MCTs) – namely, capric acid and lauric acid.

These fats are *only* found in human breast milk, cow and goat's milk, and coconut and palm kernel oils (which is not the same as palm oil). MCTs reinforce your skin, and strengthen your immunity to fight infection from bacteria and viruses.

But, MCTs also fight depression and inflammation, two major brain robbing conditions. Scientists are also studying these fats because they may fight Alzheimer's. And animal studies have shown that these fats can protect neurons from injury and cell death.

Nursing babies get about 1 gram of lauric acid per kilogram of body weight each day. You can get about two grams of lauric acid from one tablespoon of dried coconut. Quality coconut milk will contain about three and a half grams for every two ounces. Coconut oil has almost seven grams per tablespoon.

- **Avocados give you mental might.** Besides also having tryptophan, avocados have been shown to increase blood flow, which is the most important thing you can do to keep your brain working its best. As it turns out, the increased

HELP THE BRAIN WORK BETTER	DRAG DOWN BRAIN PERFORMANCE
<ul style="list-style-type: none">• Avocados• Oysters• Bananas• Beef• Broccoli• Blueberries• Brussels sprouts• Cantaloupe• Chia seeds• Chicken• Cold Water Fish• Collard greens• Eggs• Green tea• Legumes• Raw milk• Oranges• Peas• Romaine lettuce• Salmon• Spinach• Sweet Potatoes• Tuna• Turkey	<ul style="list-style-type: none">• Alcohol• Artificial colorings• Artificial sweeteners• Corn syrup• High-sugar drinks• Hydrogenated fats• Processed grains• Soy products

circulation you get from avocado nutrients is highly prevalent in the brain.

- **Don't be too quick to pass on that odd-looking potato.** Most people think of sweet potatoes as some kind of weird, orange thing your grandmother put on the table during Thanksgiving. But Grandma was on to something!

Sweet potatoes boost your body's power to defend your brain from the incredible volume of toxins we're exposed to in the modern world. In fact, the plant nutrients in sweet potatoes called *anthocyanins* may also help reduce your risks from brain-destroying heavy metals like mercury.

Eating sweet potatoes increases production of your two most powerful antioxidants, SOD and catalase, which I'll talk more about in a little bit.

For now, let's just say that brain tissue is extremely sensitive to oxidation and free radical damage, and that sweet potatoes are a great defense. Blueberries, cranberries, mangoes and other deeply colored fruits also have a similar but lesser effect.

- **Cacao can make every day happy and productive.** More specifically, the seed the plant produces, the cocoa bean – which is of course used to make chocolate.

Two studies give us great news about chocolate. The first study found that people who ate one serving of chocolate per week were 22% less likely to have a stroke.³ The second study found that people who ate 50 grams of chocolate (about two ounces) once a week were 46% less likely to die following a stroke than those who didn't eat chocolate.⁴

How is this important to your brain? Because about 80% of strokes occur when there isn't enough blood getting to the brain. During a stroke, the brain is starved of oxygen and nutrients and begins to die immediately.

Chocolate helps to counteract that in two ways. It's rich in antioxidants and helps to increase circulation.

But remember, it is important to distinguish chocolate from sugary candies. You don't have to worry about the fat in chocolate — that's the good part. But you should minimize the added sugar.

Chocolates that have the most cocoa give you the most protection for your brain. Try to find chocolates that are at least 70% cocoa.

- **Mind Your Greens.** In a study published in the journal *Neurology*, researchers discovered that eating an average of 2.8 or more servings of vegetables a day over a six-year period slowed cognitive decline by 38 to 40 percent! Those that provided the most powerful protection were leafy greens.⁵
- **Foods with tryptophan are essential.** Tryptophan is one of the ten amino acids your body can't make, so you must get it through food. It helps our brains produce serotonin, which makes us feel relaxed and in control.

Tryptophan can help fight depression, insomnia and anxiety. Turkey is famous for having tryptophan, but cashews, sunflower and pumpkin seeds and bananas are also good sources. Chicken, and beef have tryptophan.

Chapter 3

Revitalize Your Brainpower

Our bodies "burn" the food we eat for fuel and use oxygen as the catalyst, just like a fire does. As this happens, your cells produce by-products called free radicals.

Like cinders and burning ashes shooting from a crackling fire, these free-radicals damage cells and tissue like

fire burns everything it contacts. It's no coincidence that free radical damage is called "inflammation."

It's a little-known fact, but free radicals and damage from inflammation lies behind a lot of the gradual loss of brainpower that comes with aging. High-energy cells throw off a lot of free radicals. Because they use so much energy, your brain cells are particularly vulnerable.

Now that you've gotten the right nutrients to feed your mind, you're going to want to protect yourself and everything you've gained from free radicals that cause the symptoms of aging and even tissue damage.

Fortunately, your body has a weapon that neutralizes free radicals – antioxidants. And the most powerful antioxidant of all is called SOD. You may not have ever heard of it, but it's what I call your body's "master guardian." It's about 3,500 times as strong as vitamin C.⁶

It's so vital, production of SOD starts when you're in the womb. In one study, genetically engineered mice whose bodies couldn't make their own SOD died in just days from massive free radical damage.⁷

You see, antioxidants come from two places, your body and your diet. The ones your body can make – like SOD – are the primary antioxidants and the most powerful. Secondary antioxidants are the ones you get from your diet or supplements, like CoQ10 and Vitamin E.

One food you may not think of as brain-boosting is the persimmon. It gives SOD a boost.

In one study, persimmon extract had 150% more antioxidant power than grape seed extract,⁸ one of the most powerful antioxidant substances we know of. Blueberries also boost your levels of SOD.

Along with SOD, the other critical nutrient for brain protection is **Coenzyme Q10 (CoQ10)**.

You may know that CoQ10 is your heart's best friend because it gives the heart so much energy. But nature, in its wisdom, has provided a dual role for CoQ10. Not only does it give you energy, but it protects you and your brain at the same time.

A brand new study shows that CoQ10 can protect neurons from damage because of its anti-inflammatory power,⁹ and other clinical trials have shown CoQ10 can even repair Alzheimer's-like symptoms.

The best natural source of CoQ10 is red meat, especially organ meat. Our ancestors had it made. They thrived on a diet of fresh, wild-caught meat that had many times the CoQ10 that today's commercially grown meat does.

Today, the closest thing you're going to get to a wild animal is grass-fed meat. I was lucky to grow up eating grass-fed beef, and I still do today. Grass-fed beef contains more CoQ10 than any other meat on the planet.

You can also take a CoQ10 supplement, but many of the powder and tablet forms are worthless. They won't get absorbed. Absorbability is a crucial point when you're looking for a CoQ10 supplement.

That's why I recommend the ubiquinol form of CoQ10. It's the world's most potent and absorbable form of

How Do Your Antioxidants Stack Up?	
Antioxidant	Protection Level
Primary Antioxidants	
SOD	Highest
Catalase	Exceptional
Glutathione Peroxidase (GPX)	Exceptional
Secondary Antioxidants	
Glutathione, CoQ10	Very Strong
Carotenoids, Vitamin E	Strong
Flavonoids, Vitamins A, C	Strong
Minerals, Proteins	Moderate

CoQ10 because it's already in the form your body uses.

You can take the usual ubiquinone if you're under 25. But switch to ubiquinol if you're over 25.

I usually take 50 mg as a "baseline" preventative. If there are health problems, I gradually increase the dosage up to 400 mg.

CoQ10 also has a partner for brain health... it's called **creatine**.

An animal study published in the *Journal of Neurochemistry* shows that taking CoQ10 and creatine blocks the loss of dopamine in the brain (a hallmark of Parkinson's disease), protects cell membranes (they leak with age), and reduces oxidative damage.¹⁰

Using this duo each day may be a real brain booster.

Your body – primarily the liver – makes creatine naturally. You can also get it from foods like grass-fed beef, fish and apples. For every 2 lbs. of beef you eat, you will gain 5 grams of creatine.

Creatine Guidelines				
Lean Body Mass in lbs.	Loading Dose in Grams for Men	Maintenance Dose in Grams for Men	Loading Dose in Grams for Women	Maintenance Dose in Grams for Women
80	9	3	6	2
100	11	3.5	8	2.5
120	14	4.5	10	3
140	16	5	11.5	3.5
160	18	6	13	4
180	20	6.5	14.5	4.5
200	22.5	7	16	5
220	25	8	17.5	6

Source: *The Colgan Institute, San Diego.*

If you would like to supplement, the amount you should take is related to body weight and gender. See the table for dosage guidelines.

Take the loading dose daily for 10 days. Then continue with the maintenance dose. Be sure to avoid taking creatine with your morning coffee as creatine and caffeine do not interact well.

Chapter 4

Repair Your Brain With These 7 Nutrients You've Never Heard Of

The fact is, your body will respond to nutrition-based treatments in nearly every area of health, especially brainpower. My patients are living proof.

Big Pharma, on the other hand, wants you to believe that your only effective solution will be to take expensive and toxic chemically-produced patent drugs. But I've achieved great results using nutrients as therapy with thousands of patients in my medical practice.

And, a number of scientific studies, some of them unprecedented in scale, show definitively that nutritional supplements produce immediate results.

The Council for Responsible Nutrition produced a study identifying specific benefits of nutrients to successfully combat various ailments, from a weakened immune system to poor eyesight and "brain fog." Let me show you the 7 most effective yet little-known brain boosters available. They are crucial if you want to repair and maintain what you've spent so much time and study building in the first place:¹¹

- 1. DMG (Dimethylglycine)** – Oxygen is your brain's number one need if you want to think clearly and think fast. And DMG helps you use oxygen better. In a Dutch study, dimethylglycine was associated with improved cognition in areas like attention, construction, sensory and motor speed and memory.¹²

You produce it in small amounts naturally, but as you get older you can't produce as much as you need, and you need quite a lot. You see, DMG is a methyl donor, one of the most important classes of nutrient we know of. Vitamins, hormones, neurotransmitters, enzymes, DNA, RNA, and antibodies depend on substances like DMA to donate methyl groups to complete their synthesis. This process is called methylation.

Every organ in your body depends on this process. It's likely that our ability to do this also declines with age, which makes taking a supplement a good idea. You can buy DMG capsules and caplets that have up to 500mg of DMG in them, but don't waste your money. DMG pills that you eat don't work. Instead, use a sublingual (under the tongue) form of DMG at 125mg per day.

2. Methylcobalamin – This is crucial to brain function because it forms a protective layer around the nerve cells in your brain. Without that protective layer your brain can't function properly.

In clinical studies, methylcobalamin has been shown to protect and even rescue brain cells from death after injury.¹³ It also improves nerve conduction, which means it enhances the speed of the messages your brain is sending.

The toxic byproduct homocysteine destroys neurons, and methylcobalamin lowers the amount of homocysteine present in the body.

The only natural food sources of methylcobalamin are animal products like fish, meat and eggs. Chicken is not a good source

If you can't get enough through these protein sources and would like to supplement, I recommend taking 500mcg (about half a milligram) of methylcobalamin daily.

Also, be careful not to block your body from taking it in. Reflux and ulcer drugs like Pepcid, Prilosec and Zantac, plus some diabetes drugs, can stop absorption of methylcobalamin.

3. Acetyl L-Carnitine (ALC) – You won't hear about this high-octane IQ fuel from most doctors. But it's the key to brainpower.

Studies show ALC keeps the mind from slowing down as time goes by. In fact, it shores up your ability to recall words and names, follow what others are saying, and think and reason clearly. You won't have to worry about those "senior moments."

ALC provides a range of brain protection, improving mood and memory. It protects the brain from damage due to poor circulation. ALC helps injured nerve cells to repair and function normally again.

It's like an emergency power supply for your brain. Researchers have found that ALC protects brain cells from damage even when blood flow is temporarily blocked.¹⁴ ALC gives the cell continuous energy even when there is little or no blood flow for short amounts of time.

You can make some ALC from foods that have the amino acid lysine, like red meat, pork, parmesan cheese, cod, nuts, eggs and the superfood spirulina. I recommend a daily amount of 250 mg.

4. Choline – We're not just talking about forgetting your phone or your keys. If you don't have enough of this building block nutrient, you can't string thoughts together, have full access to your memory, move or even sleep.

That's because choline is the basis for the neurotransmitter acetylcholine. It's the brain chemical that lets your nerve cells fire through the synapses you've created in your brain.

You need it for all the basics like sleep, arousal, attention, memory, intelligence and mood. Your muscles

receive commands from your brain via acetylcholine. That means your sense of balance and stability is controlled by this key transmitter.

Choline is also a methyl donor, like DMG. When you have enough of it, your brain simply works better and more efficiently. The best food sources are eggs, chicken and turkey liver, and pork. If you can't get enough through food, you'll need to supplement – at least 425 mg if you're a woman, 550 mg if you're a man.

5. DMAE – This is vital to *accurate* brain functioning. It can improve your mood, increase your awareness and attention, give you more mental energy and prevent confusion and brain fog.

Studies show it also increases levels of acetylcholine. Degenerative brain conditions like Alzheimer's and Parkinson's are connected to the loss of brain cells that produce acetylcholine. DMAE replaces this chemical naturally and can ease symptoms.

DMAE can also temper mood and ease behavioral and learning problems:

- In one study, 50 hyperactive kids showed improvement in just 10 weeks.
- Another study showed children with learning disabilities did better in concentration and skill tests with this nutrient.
- They gave 80 people DMAE for another study and the people showed greater attentiveness, were more active and had a greater sense of wellbeing.¹⁵

The best sources are wild-caught fish like salmon and small, oily fish like pilchards. You need at least 35 mg per day.

6. DHA – You can turn on your “smart gene” by getting enough DHA (docosahexaenoic acid). It's one of the two main components of omega-3, the fat your brain cell membranes are primarily made of.

DHA is essential for developing intelligence. One reason is that DHA increases brain growth agents like BDNF (brain-derived neurotrophic factor). BDNF is like growth hormone for your brain.

BDNF enhances the growth and health of nearly every kind of brain cell, including “glial” cells that support brain tissue, and the cells that receive signals from other parts of the brain and communicate them properly. It also improves how neurons talk to each other

DHA kicks the gene responsible for BDNF production into high gear. And a recent Japanese study added to the good news: memory and learning ability improved dramatically with boosted BDNF production.¹⁶

DHA speeds up development in infants, increases cognition in young people and prevents decline for those who are older. Studies show that physically exerting yourself increases the effect of DHA.

It's antidepressive, reduces stress, improves eyesight, helps hearing, and reduces inflammation, a key factor in brain decline. Two new studies showed DHA can improve fluency for people who slur their words, and increases literacy in young people.

DHA also increases *plasticity* in the brain. That means that you have an easier time creating new pathways and learning new things, and a greater ability to recall what you've learned, when you feed your brain with DHA.

Foods with the most DHA include cold water wild-caught fish, and free-range animal meat. Stay away from farm-raised fish and meat as their grain-soy-antibiotic diet makes them deficient in omega-3.

I recommend you get between 1 and 3 grams of DHA-rich omega-3 every day. The best sources of clean, pure

DHA are Sacha Inchi oil and cod liver oil.

7. SAM-e – This nutrient is what’s called a “co-enzyme,” which means that it enables other chemical compounds to perform a number of essential functions. SAM-e is one of the main building blocks your brain needs to produce neurotransmitters, the chemical compounds brain cells need to send and receive signals.

SAM-e raises levels of another neurotransmitter called dopamine. Dopamine enhances learning, memory, motivation, and even helps with attention and sleep. It’s also the key to experiencing pleasure and maintaining an overall sense of well being and a good mood.

For over 20 years, SAM-e has been widely used in Europe to treat depression. And in 2002, The American Journal of Clinical Nutrition published a study that confirmed its efficacy. The study gave one group of people SAM-e and the other the antidepressant imipramine – a synthetic drug – for 6 weeks.

Both groups reported the same amount of improvement in mood. Better yet, the SAM-e group also reported significantly fewer side effects.¹⁷

Why is that important for your brain? Because people who have a history of becoming depressed are also more likely to suffer mental decline and are at greater risk for brain diseases like Alzheimer’s.¹⁸

You can get SAM-e at your local health-food store. I recommend you take 200mg a day to start. If after two weeks you’re not seeing considerable improvement, increase to 400mg.

Chapter 5

Recharge Your Brain’s Signals With Nature’s Pharmacy

PART I – Essential Herbs

There are several herbs that are widely used in Europe, but are little known in the United States, that can help you to regain the mental clarity of your youth.

Ginkgo Biloba is probably the herb most widely known in the United States for its brain-enhancing properties. And it’s all right for short term use. It will temporarily give you a boost of clarity by inducing a drug-like dilation of blood vessels to the brain. However, I don’t recommend you take ginkgo long-term because this effect cannot be sustained.

Here’s what to take instead.

My four favorite brainpower boosters are:

Bacopa – It’s not well-known in the United States, but in India, this plant is called the “herb of grace.” It’s so revered that they use it in their ritual to consecrate newborn babies. They believe it opens the gateways to knowledge.

But the latest research shows that bacopa improves the transmission of impulses between nerve cells in your brain, regenerating synapses and repairing damaged neurons. More importantly, it can improve intellectual capacity, concentration and memory, as well as help you to learn and remember new things much more easily.

In a randomized, double-blind, placebo-controlled study – the gold standard in research – they divided people into two groups. One group got bacopa and the other got a placebo. After 12 weeks, the people taking bacopa had:

- Better word recall

- Better attention
- Better memory scores
- A greater ability to ignore irrelevant information when learning ¹⁹

Another double-blind placebo-controlled investigation gave healthy people bacopa plant extract daily. After 90 days, they had significantly improved their spatial memory, memory accuracy and their ability to process visual information. ²⁰

Research also has discovered that bacopa can protect you from toxins that are harmful to your brain, especially aluminum. Long-term exposure to aluminum can increase your risk of Alzheimer's disease by 60 percent. ²¹

In a study from India, bacopa prevented a buildup of toxins between neurons, and stopped damage to the hippocampus, an important seat of learning, memory and thinking power. ²²

You can get bacopa in capsules, syrups, tinctures and extracts. You can even find it at health-food stores in its dried or powdered form, which is nice for making infusions.

To make an oil infusion, warm some sesame or olive oil in a double boiler with bacopa for four hours. After two hours, replace the bacopa. After four hours, strain the infusion. You can preserve it with rosemary oil extract.

As a supplement, bacopa usually comes in a standardized formula of 20 percent bacosides A and B. You can find it at many health-food stores, and you can get capsules in many sizes. I recommend taking 150 mg in the morning and again at night.

Yerba Mate –When I traveled to South America I found that the locals had a secret that kept them energized all day; tea made from the leaves and stems of the yerba mate plant. Having 90% more antioxidant power than green tea would make yerba mate a brain powerhouse all by itself. But yerba mate does much more for you.

Yerba mate has a bit of caffeine, but unlike coffee, yerba mate is full of vitamins, minerals and amino acids. They balance the effect of the caffeine, giving you longer-lasting and better mental energy.

When researchers tested yerba mate extract on animals they found that it improves short-term memory and social memory (the ability to recognize and interact with others). And it inhibited memory loss²³ and memory dysfunction. ²⁴

Its polyphenols also slow the growth of the bacteria responsible for bad breath.

I have seen yerba mate supplements as large as 600mg capsules, but I wouldn't recommend you take that much. For example, I only included 25mg of the extract in each serving of my energy surge product.

If you want to make yerba mate tea, you can buy the herb at most health food stores and Peruvian markets. Remember that the warmer the water and the longer you let it sit before you drink it, the bitterer the taste will be.

Vinpocetine – This extract from the periwinkle is high-octane fuel for your brain. It's one of nature's most potent antidotes to the forgetfulness, brain fog, and confusion we normally associate with aging. It unleashes your full powers of attention, concentration, and memory and puts you in back in control of your mental function. It increases blood flow to your brain, and helps your brain use oxygen better.

You can have all these benefits with just 10 mg per day.

Gotu Kola - Native to Asia and Europe, gotu kola improves brain circulation, as well as mental performance and retention. In a recent study, gotu kola extract helped increase neurite growth in human brain cells.²⁵

The most common ways to take Gotu kola are:

- 1.** As an extract, like the one used in the study. Take 10 drops per day.
- 2.** As a dried herb. You can make a tea of the dried leaf, three times daily.
- 3.** As a powdered herb (available in capsules). Take 400-600 mg, three times a day.

And here are six other important mind and memory enhancers, straight from nature:

Guarana – A popular ingredient in many energy drinks, including my own “Better Than Coffee,” Guarana provides solid, mind-clarifying benefits without the jittery jolt like you get from caffeine. The berry that Guarana comes from is high in healthy fatty acids – just the kind your brain likes. In a supplement, 200-300 mg per day works best.

Korean Red Ginseng (or panax ginseng) – Widely taken to increase energy, it has even been shown to increase testosterone levels. It also has a positive effect on blood flow. And more blood to your brain means better mental performance. You can take anywhere from 2 to 3 grams a day.

Rooibos – Rooibos tea has been said to help protect the brain and nervous system from toxins. Powerful as an antioxidant, it may even have anti tumor potential. Many drink rooibos tea for optimal brain health. It's available at your local health food store.

Hawthorn - Cleans out brain toxins and strengthens blood vessels and tissues. Hawthorn's secret is its strong OPC antioxidants (oligomeric Proanthocyanidins). They are 20 times more powerful than vitamin C and 50 times more powerful than vitamin E.

Hawthorn uses its OPCs to cross the blood-brain barrier and facilitate oxygen and nutrient transport to the brain. You can find it at any health food store but check with your doctor before using it if you have a heart condition. I usually start with 250-500 mg daily.

Rosemary – Popular in culinary dishes, rosemary can improve brain function and enhance memory and concentration. You can use rosemary as a spice or steep it as a tea, using 1 tsp. of fresh dried leaves per cup of hot water. Let it steep for 15 minutes.

Schisandra – The extract of this berry can improve memory as well as sense of well-being and mental awareness. Traditional Chinese medicine uses this berry to fight depression and increase energy levels. Pregnant and nursing women should not take Schisandra as it can be a uterine stimulant. You can take anywhere from 30-600 mg per day.

Rhodiola – Strengthens mental clarity, concentration, awareness, and memory. Studies show Rhodiola helps balance the stress on your adrenal system and help reduce levels of brain-busting stress hormones like cortisol.²⁶ I recommend taking 50-100 mg, 3 times a day. Please be certain to use a product standardized to contain 1% salidroside and/or 40-50% phenylpropanoids. Otherwise, you'll miss out on the benefits.

Part II – Einstein's Secret

After he passed away, researchers studied Albert Einstein's brain to try and gain some insight into what might have been the reason for his great genius. After many years of searching, a neuroscientist named Marian Diamond discovered that Einstein had a many more “glial” cells than most people do.

Scientists always thought of glial cells as the neurons' weird assistants. They believed neurons did all the signaling and all the “thinking.”

But new research shows that glial cells do a lot more than just take up half the space in your “gray matter.” Or in Einstein's case, quite a bit more. Some glia act as your brain's immune cells, some anchor neurons in place, and

some clean up waste. Some even signal your body for help.

These cells use *gliotransmitters* to send their signals, which stimulate and fine tune the actions of your neurons. This gives you a faster, more accurate brain with less fogginess and better concentration.

Glia also enhances the brain activity that helps you soak up the world around you. For instance, if you were missing a kind of glial cell called *oligodendrocytes*, messages would travel through your brain 30 times slower!

The best way to enhance and recharge your glial cells is with a group of antioxidants that zero in on helping you sharpen your mind. And they have memory and even mood-enhancing properties.

New research into brain activity shows that flavonoids, the antioxidant nutrients that naturally occur in plants, have a special role in protecting your glial cells.

Flavonoids assist your hard-working glial cells in getting rid of free radicals and other brain-robbers that play the biggest role in memory decline, slowing of body movements and mental fatigue.

Here are four flavonoids that give your glial cells the most benefit, and help to protect and revitalize the biggest and most underappreciated part of your brain:

- **Red Wine Rescue** – The American Cancer Society sponsored a study that showed the potent flavonoid **apigenin** was able to kill deadly glial brain cancer cells while at the same time protecting healthy cells.²⁷

And in another study, apigenin not only protected animals against symptoms of Alzheimer's, but those given apigenin had improved learning and memory capabilities, maintained the integrity of their brain cells, had better brain blood flow, reduced free radical damage, and improved brain chemical transmission.²⁸

The best sources are parsley, tomatoes, celery, artichokes, peppermint, and the herb basil. Red wine also has a good amount of this flavonoid.

- **Bees Build a Better Brain** – Toxins and pollutants in the modern world assault your body all day with factors that cause inflammation. They can even hijack enzymes your body normally uses to protect your brain. **Luteolin** can stop this process cold.

In a brand new study, luteolin almost completely protected glial cells from free radical damage and inflammation.²⁹ It also improves memory and helps ease depression.

You can get each day's supply of luteolin from celery, green peppers, the herb thyme, and in chamomile and yarrow teas.

There's also a unique source of luteolin... it's from the resin bees use to make their honeycombs called propolis. You can find it in most health food stores.

- **Mango Powered Memory Boost** – The natural extract from the leaves of the mango tree called **mangiferin** has been shown to be anti-tumor, can reduce pain, and helps protect against diabetes.

Many animal studies have also shown that mangiferin improves memory. And it protects against excitotoxins from the environment that can harm your brain.³⁰

There is no mangiferin in the actual mango fruit. You must get the extract which is available from many Asian specialty stores and online sellers like 21food.com.

- **The Brain Berry** – The little-known flavonoid called **morin** can kill cancer cells and protect the kidney from the effects of alcohol. It can also shield your neurons *and* those important glial cells I mentioned earlier called oligodendrocytes.

In a study from the journal *Glia*, researchers found that free radical damage from inflammation was much higher in glial cells not protected with morin.³¹

Morin comes from the leaves of the guava tree, and from the fruit of a tree that grows on the American prairie called the Osage orange. But the most bio-available source is the delicious Chinese White Mulberry (which is actually very dark purple).

Chapter 6

Refocus Your Mind to Stay Ready and Full of Energy

We're used to thinking of brainpower as mostly due to genetics. But there's a powerful link between what you do and how much mental acuity you have. Working out can help your brain work better, for longer than you ever thought possible. Physical exertion, combined with one of the oldest healing practices in the world –breathing exercises – will help you continue to expand your thinking speed, accuracy and focus.

Get Your Body's Energy Flowing

Your body's command center is your brain, so it's probably no surprise that it burns through a lot of energy. And the supply of energy is delivered by blood flow. In fact, your brain needs the most blood of any organ in your body. One seventh of the blood from every heartbeat goes to your brain.

As a part of the famous Framingham Heart study, researchers looked at blood flow and how it affected brain aging. They tested the cardiac indexes – that is, how much blood you can pump around your body – of over 1500 people who had not had a stroke, heart attack or signs of dementia. They found that decreased blood flow is associated with accelerated brain aging.³²

The single best way to increase blood flow to your brain is by working out. It will boost your mental sharpness and agility. In fact, we have a lot of evidence that your brain will function more successfully when you physically exert yourself.

For example, your skeletal muscles respond to exertion by creating more of the energy-producing cell engines called mitochondria. This creates many health benefits and helps you resist fatigue. The same thing is true for your brain.

The prestigious journal *Applied Physiology* did an animal study that looked at how exercise affects the creation of energy in the brain. The animals did intense exertion for eight weeks. When researchers looked at their brain chemistry, they found the animals had increased numbers of mitochondria in every part of the brain. They also had increased expression of special genes that help tell your brain make energy.³³

Another study, published in the journal *Trends in Neurosciences*, found that working out benefits both learning *and* memory. Physical exertion improves the strength of your synapses.³⁴ This improved strength, called plasticity, gives you the mental drive that networks your brain for better cognition, memory, fluidity, versatility, and adaptability.

In fact, we're now learning through many studies that increased blood flow to the brain may help you avoid Alzheimer's.

But not just any exertion works.

The best way to exert yourself is not with cardiovascular endurance exercises. Doing those will shrink your heart and reduce its capacity to get lots of blood to your brain.

You get the most benefit for your brain with my P.A.C.E. program. P.A.C.E. helps you by incrementally increasing the intensity of your exertion through time. This builds capacity in your heart and lungs, allowing

more blood and oxygen to get to the organs than need them most, especially your brain.

During my research I came across a study showing that an incrementally intensive workout program like P.A.C.E. increased blood flow levels by more than 400 percent.³⁵

The best part is, you control the progression and alter the type of workouts you do to keep it fun and interesting. For more on P.A.C.E., including workouts, videos and advice, please visit www.pacerevolution.com.

In fact, here's a brain boosting P.A.C.E.-style exercise you can do right now.

They're called **Alternating Split Squat Jumps**. This is a great exercise that requires plenty of intensity. Plus, they're excellent for building strength and power in your legs and lower body. And you don't need more than three or four feet of space to do them.

Here's how to do an alternating split squat jump...

- 1.** With your feet shoulder-width apart, step backward about two feet with your right leg (Your left foot will be flat on the ground in front of you, while your right will be on the ball of your foot behind you.)
- 2.** Lower your body by bending your hips and knees until the front thigh is parallel to the floor.
- 3.** Jump straight up using the power from your front leg and quickly switch legs while in the air.
- 4.** As you jump, bring your arms forward and throw them above your head.
- 5.** Land so that your right foot lands in the forward position and vice versa. Do another squat, bringing your arms back down.
- 6.** Repeat, alternating your legs, until you have reached your target intensity. Rest, recover. Do two more sets.

If you find these difficult, you can reduce the amount of strength required by using a narrower stance when jumping and landing. And if that's still too tough, start off with a standard jump squat and work your way up to these.

You control your progression and can even alter the type of workouts you do to keep it fun and interesting.

Use This Ancient System To Attain Mental Clarity

Did you know that too much stress kills brain cells? Research is showing stress to be one of the leading causes of mental deterioration with aging. For the elders I talk to, loss of mental capacity is the most frightening symptom of aging.

Stress has serious physiological effects on the body. When you are stressed, your body produces a hormone called cortisol. In moderate amounts, cortisol is not very harmful. But cortisol is secreted excessively in response to chronic stress. In these larger amounts, cortisol is extremely toxic.

Cortisol actually kills and disables your brain cells. Over your life span, cortisol ruins your brains "biochemical integrity." Chronic exposure to cortisol causes the mental haziness, forgetfulness, and confusion that is associated with aging.

Almost all hormone levels fall as you age. Cortisol is one of the very few exceptions. Cortisol actually rises as you grow older.

Fortunately, the loss of mental faculties because of stress and cortisol is not inevitable. You can keep your brain healthy and your mind sharp in a way that's easy and fun.

All you have to do is breathe.

Have you ever thought about how our terms to describe breathing are tied to life? Respiration has the same root as spirit and inspire. Inhale and exhale have the same root as hale, meaning exceptional health and vigor.

But in the modern world, we're so distracted, we sometimes take our breath for granted.

That's a shame because if you take a few moments a day to focus on your breathing, it will refocus and calm your mind.

Your body has a thousand different autonomic functions going on all the time that you're mostly unaware of. Your nervous system is a balance of those autonomic functions – the “fight-or-flight” sympathetic system, and the relaxing parasympathetic system.

The two autonomic functions you probably know best are your heartbeat and your breathing. Normally you breathe without thinking, and you have a balance of the sympathetic and parasympathetic.

When you breathe in, it's sympathetic – fight or flight. One example in our language would be “gasping in shock.”

When you breathe out, that's parasympathetic – relaxing. Again, it's in our language. For example, “breathe a sigh of relief” or “waiting to exhale.”

Being under stress, or in a sympathetic state, is not unnatural. In your ancient environment, stressors would happen all the time. But you dealt with them, and they were over. An animal attacked, you fought it off. You chased after your prey, made the kill and rested.

Our brains were designed to deal with that.

In today's world, you can be under a lot of stress, but for great lengths of time. A 30 year mortgage is a good example of a long-term stressor. Or saving for college. Your body can respond by staying in a sympathetic state. Our brains were not designed for that.

The good news is, you can change from sympathetic to parasympathetic, lower your stress levels and recharge your brain. It's as simple as focusing your attention on your breath.

This is what makes breathing so effective at resetting the balance in your autonomic nervous system – you have conscious control over it.

It's the only autonomic function that you can reach out and touch. You can, if you want to, focus your conscious intent on your breathing, and control it voluntarily. And as you do that, you bring your conscious mind into contact with that autonomic function.

Your mind is then able to relax, and concentrate on the things that make you happy.

Our ancestors knew this: Almost every ancient system of health has something to say about breathing. The Ayurvedic and Chinese systems both focus on exhaling. Even the Japanese martial art Karate uses breathing techniques for focus in their forms of movement called “Kata.”

One of the most effective ways to touch your autonomic system in order to relax your mind and restore your balance is **cadence breathing**.

On my last trip to India, I met a yoga teacher at the center where I stayed. Every morning we'd wake before dawn. As we watched the sunrise over the mountain, he taught me how to breathe.

What you do is breathe in to a count of four, hold your breath to a count of seven, and exhale to a count of eight. This was developed through trial and error over millennia.

It makes you exhale for twice as long as you inhale, and that's the key.

While you're practicing your cadence breathing, use these four simple steps to help regain your mental clarity:

The first step is to **clear your mind**. The goal is to get rid of all the excitatory energy that your environment is pummeling you with all the time.

The second step is to **focus your conscious attention on your breathing**. Think about the cadence of your breath, and exclude other thoughts. Constantly re-focus your attention on the breath.

This is the way you train your mind – by constantly clearing your thoughts and re-focusing on your breath. Distractions are going to happen. But you don't waste any energy over them. You don't form an opinion on whether it's good, bad or indifferent. Each time it happens, you gently redirect your focus back to your breath.

And each time that happens, you can take a little credit, because you're gaining more and more control over the process.

Step three is to **observe your breathing**. Observe how long it takes you to inhale and exhale. You're not trying to influence it yet; you're just trying to observe the cadence. Where does inhaling stop? Where does exhaling begin? Focus on the change and how it feels to go from inhaling to exhaling.

The fourth step is to **elongate the exhalation**. This is where you start to exert control over this autonomic function, and influence the parasympathetic system to help you relax. Make sure you've inhaled fully, using your abdomen and lungs. Then, push out all of your breath slowly and fully.

The more you do this, the more proper breathing will become habit. This will help your body recover from the stress of the modern world, give you back your focus and increase your mental energy.

Chapter 7

Build a Better Brain Starting Today

When you were very small, you couldn't do a whole lot of things. You couldn't add numbers, tie your shoes, or even walk. But you had the *ability* to learn those things.

That's because your brain has neurons – millions and millions of these cells, all with tiny branches coming off of them and waiting to connect to other neurons.

When you're born, most of them are not connected to each other. But when you learn things, the messages travel from one neuron to another, creating connective pathways called synapses. The more of these connections, or synapses, you can develop between brain cells, the better your brain will perform.

Keeping the connections you have, and constantly creating new pathways, is the key to building a better brain, no matter what your age.

So, how do you do this?

One way is to keep your mind challenged – keep it guessing. The best way to do this is to create your own “mental education program”...

Education turns out to be one of the best forms of protection against brain diseases like Alzheimer's. In fact, a Mayo Clinic study showed that twenty-five percent of those with an eighth grade education or less had Mild Cognitive Impairment, which leads to Alzheimer's. The disease only showed up in eight and a half percent of those with more than a college degree.

Part of educating yourself can be as simple as using your senses. Too many of our daily activities activate only one part of the brain, leaving the less dominant areas relatively inactive. But by stimulating your senses, you can activate both sides of your brain. Our senses of taste and smell are especially powerful and are associated with the memory centers of the brain.

Stimulate your taste and smell senses daily with different types and textures of food, spices, oils and other pleasant sensations. Paying attention to tastes and smells of everything you eat is important, and it's something you can't do when you rush your meal. For example, a food or wine tasting can be very therapeutic and engages both sides of your brain.

However, avoid artificial and chemical tastes and smells. They're meant to confuse your brain into thinking a food is something it is not.

Practicing typing on a keyboard, or playing the piano are two good examples of how using your sense of touch can stimulate your brain. Both touch typing and playing the piano work many sensory and motor regions of your brain at the same time.

Another powerful sensory stimulation is sound. By listening to enjoyable music you increase healthy "alpha" brain waves. The brain benefits are even better if you are listening with your eyes closed, and are as relaxed as possible.

For an even better brain workout, listen to the different rhythms, instruments, or parts of the song. All these separate items, from listening to picking out instruments, stimulate both the creative right side of the brain and the analytical left brain.

Using the opposite side of your body to do things can also stimulate new pathways in your brain. From an early age we learn to be unilateral – we do things with one side of the body or the other. Lefty or righty.

Evaluate your habits and start using your opposite hand, and foot, for more activities. It will seem odd at first, but even performing this task once starts improving brain function.

You can also repair and improve your brain by playing games. It's true. Games aren't just fun, many are just the kind of mental exercises that build new pathways in your brain and keep your mind young and sharp.

Take crossword puzzles, which are a favorite of mine. Even the simple ones get you thinking about people, places and things you may not otherwise think of, or even try to remember.

Other good mental exercises include word and math games.

The Internet and your local library are filled with books and exercises that can help you learn new things so you can constantly create new synapses and improve your brain performance as you age.

In fact, a study I read showed that two-thirds of the people following a "mental education program" showed significant improvement, and 40% returned to pre-decline cognitive performance levels. What's more, they maintained these benefits indefinitely. Regular mental stimulation offers another plus, it can protect from mind robbing diseases.

One fun book you can buy at your local bookstore is called "Arithmetricks: 50 Easy Ways to Add, Subtract, Multiply, and Divide Without a Calculator" by Edward Julius. Another is "21 Games for The Mind that Won't Shut Up!" by AT Lynne. There's also "Mind Hacks: Tips & Tricks for Using Your Brain" by Tom Stafford and Matt Webb.

A few good places to start on the Web are:

- SharpBrains (www.sharpbrains.com)

- Brainist.com (www.brainist.com)
- NeuroMod online memory improvement test (memory.uva.nl/index_en)
- Brain Rules (brainrules.net)
- Mempowered (memory-key.com)
- The Original Memory Gym (memorise.org)
- Cool Math Games – great for kids (coolmath-games.com)
- Lumosity Brain Games – requires login (lumosity.com)
- Brain Metrix (brainmetrix.com)
- Posit Science – clinically proven software (positscience.com)
- Grey Matters – The mental gymnasium (gmmentalgym.blogspot.com)

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- ¹ Gold, M. “The Bitter Truth About Artificial Sweeteners.” NEXUS Magazine. www.nexusmagazine.com Oct/Nov 1995; Vol. 2 No. 128. Retrieved 10/03/11.
- ² Den Hartog G.J.M. et. al. “Erythritol is a sweet antioxidant.” Nutrition, 2009; 1-10.
- ³ “Can Chocolate Lower Your Risk of Stroke?” American Academy of Neurology. www.aan.com. Retrieved February 2010.
- ⁴ Mayo Clinic staff, “Causes of Strokes.” Mayo Clinic. www.mayoclinic.com. Retrieved 10/03/2011.
- ⁵ Morris, M.C., et. al. “Associations of vegetable and fruit consumption with age-related cognitive change.” Neurology October 2006; vol. 67 no. 8 1370-1376.
- ⁶ Colman J. “Life Span-Increasing Effects of Super Oxide Dismutase (SOD).” LEM. Winter 2005/2006.
- ⁷ Li, et al. Cardiomyopathy and neonatal lethality in mutant mice lacking manganese superoxide dismutase. 1995. Nature Genetics. 11:376-381.
- ⁸ Hong Seok Ahn et. al. “Antioxidative activity of persimmon and grape seed extract: in vitro and in vivo.” Nutrition Research 22 (2002) 1265–1273.
- ⁹ Won R, Lee KH, Lee BH. “Coenzyme Q10 protects neurons against neurotoxicity in hippocampal slice culture.” Neuroreport. 2011 Oct 5;22(14):721-6.
- ¹⁰ Yang L et al. Combination therapy with coenzyme Q10 and creatine produces additive neuroprotective effects in models of Parkinson’s and Huntington’s diseases. J Neurochem. 2009 Jun;109(5):1427-39.
- ¹¹ Dickinson, Annette, The Benefits of Nutritional Supplements, Council for Responsible Nutrition, June 2002.
- ¹² Eussen SJ. “The association of betaine, homocysteine and related metabolites with cognitive function in Dutch elderly people.” Br J Nutr. 2007 Nov;98(5):960-8.
- ¹³ Hemendinger A., Armstrong J., Brooks R. “Methyl Vitamin B12 but not methylfolate rescues a motor neuron-like cell line from homocysteine-mediated cell death.” Toxicol Appl Pharmacol. 2011 Mar 15;251(3):217-25.

- ¹⁴ Calvani M. et al., Attenuation by acetyl-L-carnitine of neurological damage and biochemical derangement following brain ischemia and reperfusion. *Int J Tissue React* 1992; 21(1): 1-6
- ¹⁵ Dimpfel W, Wedekind W, Keplinger I. "Efficacy of (DMAE) containing vitamin-mineral drug combination on EEG patterns in the presence of different emotional states." *Eur J Med Res*. 2003 May 30;8(5):183-91.
- ¹⁶ Yamada et al. "Role for brain-derived neurotrophic factor in learning and memory." *Life Sciences*. 2002. 70(7):735-744.
- ¹⁷ Delle C et al. "Efficacy and tolerability of oral and intramuscular S-adenosyl-L-methionine ..." *Am J Clin Nutr* 2002 Nov; 76(5): 1172S-1176S
- ¹⁸ Enache D, Winblad B, Aarsland D. "Depression in dementia: epidemiology, mechanisms, and treatment." *Curr Opin Psychiatry*. 2011 Nov;24(6):461-472.
- ¹⁹ Calabrese, C. et al, "Effects of a standardized Bacopa monnieri extract on cognitive performance, anxiety, and depression in the elderly..." *J. Altern. Complement. Med.* July 2008;14(6):707-13
- ²⁰ Stough, C., et al, "Examining the nootropic effects of a special extract of Bacopa monniera on human cognitive functioning..." *Phytother. Res.* Dec. 2008;22(12):1629-34
- ²¹ Jansson, Erik T., "Aluminum Exposure and Alzheimer's Disease," *Journal of Alzheimer's Disease* 3 2001: 541-549
- ²² Jyoti, A., Sharma, D., "Neuroprotective role of Bacopa monniera extract against aluminum-induced oxidative stress in the hippocampus of rat brain," *Neurotoxicology* 2006;27(4):451-7
- ²³ Prediger, RD, et. al. "Effects of acute administration of the hydroalcoholic extract of mate tea leaves (*Ilex paraguariensis*) in animal models of learning and memory." *J Ethnopharmacol.* 2008 Dec 8;120(3):465-73.
- ²⁴ Colpo, G. et. al. "Ilex paraguariensis has antioxidant potential and attenuates haloperidol-induced orofacial dyskinesia and memory dysfunction in rats." *Neurotox Res.* 2007 Oct;12(3):171-80.
- ²⁵ Garcia-Alloza M, Dodwell SA, Meyer-Leuhmann, M Hyman BT, Bacskai BJ. "Plaque-derived oxidative stress mediates distorted neurite trajectories in the Alzheimer mouse model." *J Neuropathol Exp Neuro.* 2006 Nov;65(11): 1082-9.
- ²⁶ No Authors Listed. "Rhodiola rosea. Monograph." *Altern Med Rev.* 2002;7:421-3.
- ²⁷ Das A, Banik NL, Ray SK. "Flavonoids activated caspases for apoptosis in human glioblastoma T98G and U87MG cells but not in human normal astrocytes." *Cancer.* 2010 Jan 1;116(1):164-76.
- ²⁸ Liu R, Zhang T, Yang H, Lan X, Ying J, Du G. "The flavonoid apigenin protects brain neurovascular coupling against amyloid- β -induced toxicity in mice." *J Alzheimers Dis.* 2011;24(1):85-100.
- ²⁹ Zhu LH, Bi W, Qi RB, Wang HD, Lu DX. "Luteolin inhibits microglial inflammation and improves neuron survival against inflammation." *Int J Neurosci.* 2011 Jun;121(6):329-36.
- ³⁰ Lemus-Molina Y, Sánchez-Gómez MV, Delgado-Hernández R, Matute C. "Mangifera indica L. extract attenuates glutamate-induced neurotoxicity on rat cortical neurons." *Neurotoxicology.* 2009 Nov;30(6):1053-8.
- ³¹ Ibarretxe G, Sánchez-Gómez MV, Campos-Esparza MR, Alberdi E, Matute C. "Differential oxidative stress in oligodendrocytes and neurons after excitotoxic insults and protection by natural polyphenols." *Glia.* 2006 Jan 15;53(2):201-11.
- ³² Angela L. Jefferson, PhD et. al. "Cardiac Index Is Associated With Brain Aging." *Circulation.* 2010;122:690-697.
- ³³ Steiner, J. et. al. "Exercise Training Increases Mitochondrial Biogenesis in the Brain." *Journal of Applied Physiology* August 2011 jap.00343.2011
- ³⁴ Carl W. Cotman , Nicole C. Berchtold and Lori-Ann Christie. "Exercise builds brain health: key roles of growth factor cascades and inflammation." *Trends in Neurosciences.* September 2007, Volume 30, Issue 9, 464-472, 1.
- ³⁵ Adapted from: von Ardenne M. "Oxygen Multistep Therapy," Thieme, 1990, p144.