

## Health Foods and Diet

A growing number of herbal remedies, dietary supplements and "medical foods" are promoted as memory enhancers or treatments to delay or prevent Alzheimer's disease and related dementias. Claims about the safety and effectiveness of these products, however, are based largely on testimonials, tradition, plus a small body of scientific research. The rigorous scientific research required for the approval of a prescription drug is not required by law for the marketing of dietary supplements or "medical foods." A selection of these are listed below. However, it should be born in mind that the effectiveness and safety are unknown, purity is often unknown and dietary supplements can have serious interactions with prescribed medications. This website accepts *no responsibility* for any of the items mentioned.

### Caprylic acid (Axona) and coconut oil

Caprylic acid is the active ingredient of Axona, which is marketed as a "medical food." Caprylic acid is a medium-chain triglyceride (fat) produced by processing coconut oil or palm kernel oil. The body breaks down caprylic acid into substances called "ketone bodies." The theory behind Axona is that the ketone bodies derived from caprylic acid may provide an alternative energy source for brain cells that have lost their ability to use glucose (sugar) as a result of Alzheimer's. Glucose is the brain's chief energy source. Imaging studies show reduced glucose use in brain regions affected by Alzheimer's.

### Coral calcium

"Coral" calcium supplements have been heavily marketed as a cure for Alzheimer's disease, cancer and other serious illnesses. Coral calcium is a form of calcium carbonate claimed to be derived from the shells of formerly living organisms that once made up coral reefs. Coral calcium differs from ordinary calcium supplements only in that it contains traces of some additional minerals incorporated into the shells by the metabolic processes of the animals that formed them. It offers no extraordinary health benefits. Most experts recommend that individuals who need to take a calcium supplement for bone health take a purified preparation marketed by a reputable manufacturer.

### Ginkgo biloba

*Ginkgo biloba* is a plant extract containing several compounds that may have positive effects on cells within the brain and the body. It is an acetylcholinesterase inhibitor. *Ginkgo biloba* is thought to have both antioxidant and anti-inflammatory properties, to protect cell membranes and to regulate neurotransmitter function. *Ginkgo* has been used for centuries in traditional Chinese medicine and currently is being used in Europe to alleviate cognitive symptoms associated with a number of neurological conditions. However, results of a large, multicenter Phase 3 clinical trial conducted by several branches of the National Institutes of Health showed that ginkgo was no better than a placebo in preventing or delaying Alzheimer's disease.

### Huperzine A

Huperzine A is a moss extract that has been used in traditional Chinese medicine for centuries. It is an acetylcholinesterase inhibitor. It has properties similar to those of cholinesterase inhibitors, one class of FDA-approved Alzheimer's medications. As a result, it is promoted as a treatment for Alzheimer's disease. Because currently available formulations of huperzine A are dietary supplements, they are unregulated and manufactured with no uniform standards. Taking these unregulated preparations could increase the risks of serious side effects, especially if used in combination with approved Alzheimer's drugs.

### Huperzia serrata

An extract from a variety of the Chinese club moss, *Huperzia serrata*. Studies carried out in China indicated that it contains the acetylcholinesterase inhibitor huperzine A, a promising treatment for Alzheimer's disease, with excellent penetration into the CNS and a remarkable in vivo half-life. Two double-blind clinical trials carried out in China demonstrate that Huperzine A is both safe and effective for the long term treatment of Alzheimer's dementia. In addition to its activity as an AChE inhibitor, recent findings suggest that Huperzine A has other neuroprotective functions: 1) Huperzine A inhibits glutamate-induced cytotoxicity in cultures of rat neonatal hippocampal and cerebella neurons; 2) Huperzine A promotes dendrite outgrowth of neuronal cultures. It is widely distributed over-the-counter as a nootropic and dietary supplement

### Omega-3 fatty acids

Omega-3's are a type of polyunsaturated fatty acid, a nootropic nutrient. Research has linked certain types of omega-3 to a reduced risk of heart disease and stroke. Research has also linked high intake of omega-3 to a possible reduction in risk of dementia or cognitive decline. The chief omega-3 in the brain is DHA, which is found in the fatty membranes that surround nerve cells, especially at the microscopic junctions where cells connect to one another. Theories about why omega-3s might influence dementia risk include their benefit for the heart and blood vessels; anti-inflammatory effects; and support and protection of nerve cell membranes. Experts agree that more research is needed, and there is not yet sufficient evidence to recommend DHA or any other omega-3 fatty acids to treat or prevent Alzheimer's disease.

### Phosphatidylserine

Phosphatidylserine is a kind of lipid, or fat, a nootropic nutrient that is the primary component of the membranes that surround nerve cells. In Alzheimer's disease and similar disorders, nerve cells degenerate for reasons that are not yet understood. The theory behind treatment with phosphatidylserine is its use may shore up the cell membrane and possibly protect cells from degenerating. The first clinical trials with phosphatidylserine were conducted with a form derived from the brain cells of cows. Some of these trials had promising results. However, most trials were with small samples of participants but this line of investigation came to an end in the 1990s over concerns about mad cow disease. Supplements containing phosphatidylserine are now derived from soy extracts. Experts agree that more research is needed, and do not currently recommend use of phosphatidylserine.

### Tramiprosate (marketed as a "medical food" called ViviMin)

Tramiprosate is a modified form of taurine, an amino acid nootropic nutrient found naturally in seaweed. Amino acids are the chemical building blocks of proteins. Tramiprosate was tested in a large clinical study as a possible Alzheimer's treatment. Analysis of the trial data was initially inconclusive for a variety of reasons. The manufacturer decided to abandon development of tramiprosate as a prescription drug and market it over the Internet a "medical food." Tramiprosate currently has no proven benefits.

### Cocoa and Chocolate

Cocoa flavanols might help to treat age-related cognitive impairment but, based on a new study, **not** Alzheimer's itself. Researchers have suspected for years that the cocoa in chocolate could have health benefits, particularly because of chemicals that it can contain called flavanols. A recent clinical trial suggests that those benefits might extend to the aging brain, although only to a limited extent. The trial suggested that cocoa high in flavanols can help to treat one aspect of the cognitive impairment that is common with aging itself. Other aspects of cognitive aging, like processing speed, were not tested. The trial does not suggest that cocoa flavanols will protect against Alzheimer's.

If you're considering giving high-flavanol cocoa a try, bear in mind two things. First, flavanol levels in chocolate and cocoa vary extensively. Milk chocolate has less cocoa than dark chocolate, so it has less flavanols as well. But dark chocolate won't have many flavanols either if the cocoa was "dutch" (i.e. processed with alkali), a common processing step that makes cocoa darker and less acidic. Second, other clinical trials have also looked at whether normal cocoa or flavanol-enriched cocoa can improve cognitive function. Unfortunately, at least 2 of these trials observed no benefit.

### Walnuts

Do walnuts offer protection from Alzheimer's? A recent study reported that walnuts eaten daily helped to protect mice against the behavioural and learning impairments common in animals genetically modified to exhibit features of Alzheimer's disease. So what does the study mean for your health? Unfortunately, not much. While laboratory mice can help scientists to determine whether a given food or drug is likely to affect specific molecules and disease pathways in humans (like the beta-amyloid and tau characteristic of Alzheimer's disease), the authors of this study did not report on this effect. Instead, they evaluated protection from behavioural and learning impairments, results for which mice have not proven to be very reliable models.

On the other hand, walnuts are a nutritious and minimally-processed food full of vitamins, minerals, antioxidants, and flavonoids known to offer health benefits. They also contain omega-3 fatty acids, but not the long-chain omega-3 fatty acids that have been most directly linked to brain health. Nuts in general are often a healthy choice, particularly for long-term health. They can be a part of a Mediterranean diet, which is linked to healthy aging and was reported to improve many aspects of health in older people. People who eat nuts may also be at a lower risk of dying from a variety of causes. There's little reason to conclude that walnuts or other nuts specifically protect against cognitive decline, Alzheimer's disease, or related dementias.

### Have a Cup

It's probably not the reason you made that delicious cup of coffee, but there's something in there that seems to increase levels of granulocyte colony stimulating factor (GCSF) in our blood. Neuroscientists don't yet know exactly how or why it happens (and it won't happen in your cup of decaf, because there's some interaction with the caffeine content), but it's a potential health benefit because doses of GCSF have been shown to improve memory in lab experiments by boosting the production of new brain cells - and people with Alzheimer's disease have unusually low GCSF levels.

### Fish

New studies provide further evidence that a diet rich in fish can support long-term brain health. Fish oil is a nootropic nutrient. Nine years after healthy volunteers (all over 65) reported their eating habits; scientists conducted MRIs on the same group of subjects. The result: people who ate fish at least once per week at the start of the study had less atrophy nine years later in the areas of the brain prone to Alzheimer's disease and important for memory and cognition. This finding isn't entirely new. Previous studies have also reported that higher blood levels of EPA and DHA, both omega-3 fatty acids found in many fish, are associated with less brain atrophy and other symptoms of brain aging.

Do fish oil supplements provide the same benefit? This latest study would suggest not, but the evidence remains inconclusive. Supplements can provide high levels of DHA and EPA, but do not supply lean protein, selenium, iron, iodine, zinc and vitamins that may contribute to brain health. In this study, the level of DHA or EPA in fish was apparently not important to the perceived protection from brain atrophy.

### Acetylcholine

Acetylcholine is an abundant neurotransmitter in the brain. It is a cholinergic. It is vital for good mood, mental alertness, concentration and memory, all qualities that are lost or dim with Alzheimer's. It also plays a role in keeping primitive emotions in check such as anger, fear and aggression. It helps to maintain good blood flow to the brain so it is a critical brain chemical and it is the target of Alzheimer's drugs which block its breakdown, eg galantamine. Junk food, restaurant food and packaged foods that are high in unhealthy fats can lead to low acetylcholine levels. The most abundant dietary sources are egg yolks, cream, fatty cheeses, fatty fish, fatty meats, liver, avocados and almonds.

### Folic Acid

Homocysteine is a valuable amino acid found in blood plasma. If its metabolism is upset by certain nutritional deficiencies such as too little of the folic acid vitamins B<sub>12</sub> and B<sub>6</sub>, the level of homocysteine rises. This increases the risk of heart disease or strokes and perhaps Alzheimer's dementia. Theoretically, this means that Alzheimer's might be prevented by increasing the amount of folic acid intake in the body, either through eating foods rich in the vitamin or taking a supplement. However, there is no evidence in the short term to confirm this. Foods rich in folic acid are liver, spinach, broccoli, spring greens, peanuts, walnuts, cauliflower, eggs, lettuce, mushrooms, tomatoes and oranges.

### Vitamin D

Researchers have found that those with persistently low levels of vitamin D were up to 2.4 times as likely to develop Alzheimer's compared with people with normal vitamin D levels. However, whilst the correlation between low vitamin D and dementia risk exists, it is possible that low vitamin D levels did not cause Alzheimer's but were linked to other reasons in some people.

### Curcumin

Curcumin (Turmeric), an ancient Indian herb used in curry powder, has been extensively studied in modern medicine and Indian systems of medicine. It has been used in various types of treatments for dementia and traumatic brain injury. Curcumin also has a potential role in the prevention and treatment of Alzheimer's. Curcumin as an antioxidant, anti-inflammatory and lipophilic action improves the cognitive functions in patients with Alzheimer's. A growing body of evidence indicates that oxidative stress, free radicals, beta amyloid and cerebral deregulation caused contribute to the key event in Alzheimer's disease pathology. Due to various effects of curcumin, such as decreased beta-amyloid plaques, delayed degradation of neurons, metal-chelation, anti-inflammatory, antioxidant and decreased microglia formation, the overall memory in patients with Alzheimer's can improve. The prevalence of Alzheimer's among adults aged 70-79 years in India is 4.4 times less than that of adults aged 70-79 years in the United States.

## Pomegranite

New research has recognized that the progression of Alzheimer's Disease can be slowed by a compound found in pomegranate. The polyphenol, punicalagin, from pomegranate has been shown to inhibit the inflammation in the microglia, which are specialized brain cells, and could prevent or slow down the development of dementia's. The inflammation of these cells leads to the destruction of additional brain cells and increases the condition of Alzheimer's and other forms of dementia. The antioxidant compounds are found in the outer skin of the pomegranate, not the fruit. Juice products that are 100 percent pomegranate equates to 3.4 percent of punicalagin availability. Research is also showing that punicalagin can be used to reduce painful inflammation that accompanies rheumatoid arthritis and Parkinson's Disease. This compound is useful for any condition where inflammation is present.

## Salvia

Salvia is a herb which has been used in Chinese medicine for improving circulation and dilating blood vessels. It has been extensively used to treat dementia. Salvia, also called Dan Shen and Red Sage Root, has been clinically proven to help patients who have dementia to improve blood circulation in the brain. Research indicates that the root of this extract contains amazing medicinal properties which can help in aiding memory and preventing cognitive disorientation. The extract of this herb's root should be consumed for healing dementia. New research is providing evidence that Red-Root Sage works to detoxify the blood. This aspect not only benefits liver, spleen and kidney functions, but the purifying of the blood could relieve specific skin problems while also having a positive effect on the aging process.

## Bacopa

In India, this herb is commonly known as Brahmi. Bacopa Monnieri is the name given to this herb by botanists. It has been used since ancient times in Ayurvedic medicine to enhance and repair memory loss, thereby proving to be invaluable in cases of dementia. It has been known to improve brain function and enhance the memory and mental agility of patients suffering from dementia. Bacopa specifically improves spatial memory and cognition abilities. This herb also acts as a protection against the possibility of developing dementia. Bacopa has been found by researchers to increase recall ability in persons. Attention and verbal information processing improve considerably through the use of this herb. The raw leaves of this herb can be chewed for best results, or taken in capsule form.

## Lemon Balm

This herb is botanically known as *Melissa Officinalis*. Lemon Balm is a herb that has soothing properties and it is good for the nervous system. As the brain which is part of the central nervous system is the key organ affected during dementia, Lemon Balm can have positive benefits for persons diagnosed with this disease. Researchers have found that it is also good for countering memory loss in dementia patients. This is because it contains the active chemical called acetylcholine. Dementia of mild to moderate form in patients suffering from Alzheimer's disease can apparently be contained.

## Milk Thistle

Milk Thistle is another effective herbal remedy for dementia. Milk Thistle is known by the scientific name *Silybum Marianum*. This herb is also known as Marian Thistle, Mary Thistle or Our Lady's Thistle. This herb contains a potent substance called silymarin which is very helpful for treating symptoms of dementia because it clears amyloid plaque. Amyloid plaque hinders cellular communication in the nerve pathways of the brain in dementia patients. Milk Thistle seeds can be crushed after being roasted and added to hot water. The herb is also available in supplement form or as an extract.

## Diet and Lifestyle Guidelines

Studies have suggested that dietary and lifestyle factors may influence the risk of developing Alzheimer's, raising the possibility that preventive strategies may be effective. This body of research is incomplete. However, because the most scientifically supported lifestyle factors for Alzheimer's disease are known factors for cardiovascular diseases and diabetes, based on the 'precautionary principle' preliminary guidance can be given. At the International Conference on Nutrition and the Brain, Washington, DC, July 19–20, 2013, speakers were asked to comment on possible guidelines for Alzheimer's disease prevention, with an aim of developing a set of practical, albeit preliminary, steps to be recommended to members of the public, albeit that scientific consensus may not have been achieved. From this discussion, 7 guidelines emerged related to healthful diet and exercise habits. ( Ref:

Barnard N.D et al., "Dietary and Lifestyle Guidance for the Prevention of Alzheimer's Disease"., *Neurobiology of Aging*, 35, 2, S74, 2014.) These are:-

- a) Minimize intake of saturated fats and trans fats. Saturated fat is found primarily in dairy products, meats, and certain oils (coconut and palm oils). Trans fats are found in many snack pastries and fried foods and are listed on labels as "partially hydrogenated oils."
- b) Vegetables, legumes (beans, peas, and lentils), fruits, and whole grains should replace meats and dairy products as primary staples of the diet.
- c) Vitamin E should come from foods, rather than supplements. Healthful food sources of vitamin E include seeds, nuts, green leafy vegetables, and whole grains. The recommended dietary allowance (RDA) for vitamin E is 15 mg per day.
- d) A reliable source of vitamin B<sub>12</sub>, such as fortified foods or a supplement providing at least the recommended daily allowance (2.4 µg per day for adults), should be part of the daily diet. Have blood levels of vitamin B<sub>12</sub> checked regularly as many factors, including age, may impair absorption.
- e) If using multiple vitamins, choose those without iron and copper and consume iron supplements only when directed by a physician. Avoid iron overload from red meats.
- f) Although aluminium's role in Alzheimer's disease remains a matter of investigation, those who desire to minimize their exposure can avoid the use of cookware, antacids, baking powder, or other products that contain aluminium.
- g) Include aerobic exercise, equivalent to 40 minutes of brisk walking 3 times per week.

In addition to the foregoing guidelines, other steps merit further investigation for possible inclusion in future iterations of prevention guidelines. These could include recommendations as follows:-

- a) Maintain a sleep routine that will provide an appropriate amount of sleep each night, approximately 7–8 hours for most individuals. It is important to evaluate and treat any underlying sleep disorders, such as obstructive sleep apnoea. Sleep disturbances have been associated with cognitive impairment in older adults.
- b) Engage in regular mental activity that promotes new learning, for example, 30 minutes per day, 4–5 times per week. Several studies have suggested that individuals who are more mentally active have reduced risk for cognitive deficits later in life.

The Mediterranean diet, characterised by a high intake of salads, nuts, fish, tomatoes, poultry, brassicas, fruits, and dark and green leafy vegetables and low intake of high-fat dairy, red meat and butter, is generally agreed to lower the risk of Alzheimer's. A sensible diet in later life appears to be more important than a diet earlier in life. A proper diet 4 years prior to the onset of Alzheimer's showed the best results. (Ref: Grant W.B., "Dietary links to Alzheimer's Disease"., *J.Alzheimer's Dis.*, 1, 197, 1999)