NATURAL NOOTROPICS

with Craig B. Sommers ND, CN

- Neuro Enhancers
- Cognitive Enhancers
- Memory Enhancers
- Intelligence Enhancers

Improve one or more aspects of mental function

- Working Memory
- Attention Span
- Problem Solving
- Speed of Processing Information

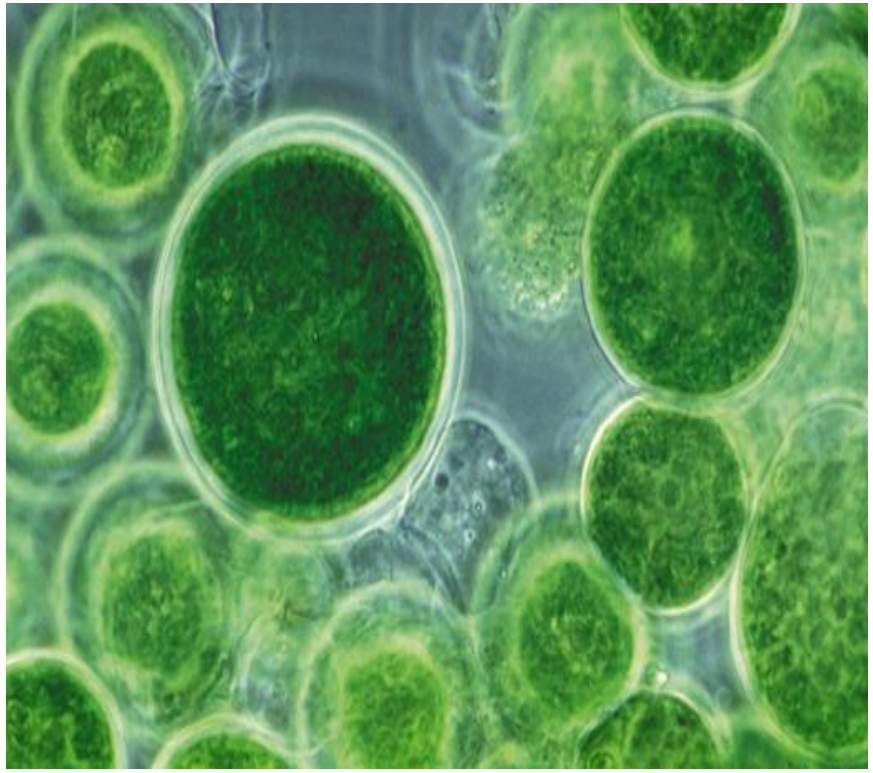
- Nutraceuticals
- Vitamins
- Minerals
- Dietary Supplements

IODINE

- Deficiency during pregnancy is #1 preventable cause of intellectual disability
- Iodine supplements produce a child with an IQ 20 to 30 points higher than the parents' IQ
- Best source - Sea Vegetables

Omega 3 Fatty Acids

- **Needed for the developing brain**
- **Human brains are composed of 60% fat**
- **Omega 3 is involved in the synthesis and function of neurotransmitters**
- **EPA and DHA originate from algae**
- **Algae is grown in tanks, free of pollutants and heavy metals**
- **Fish oil may contain PCBs, Dioxins and heavy metals**



Essential fatty acids and human brain.

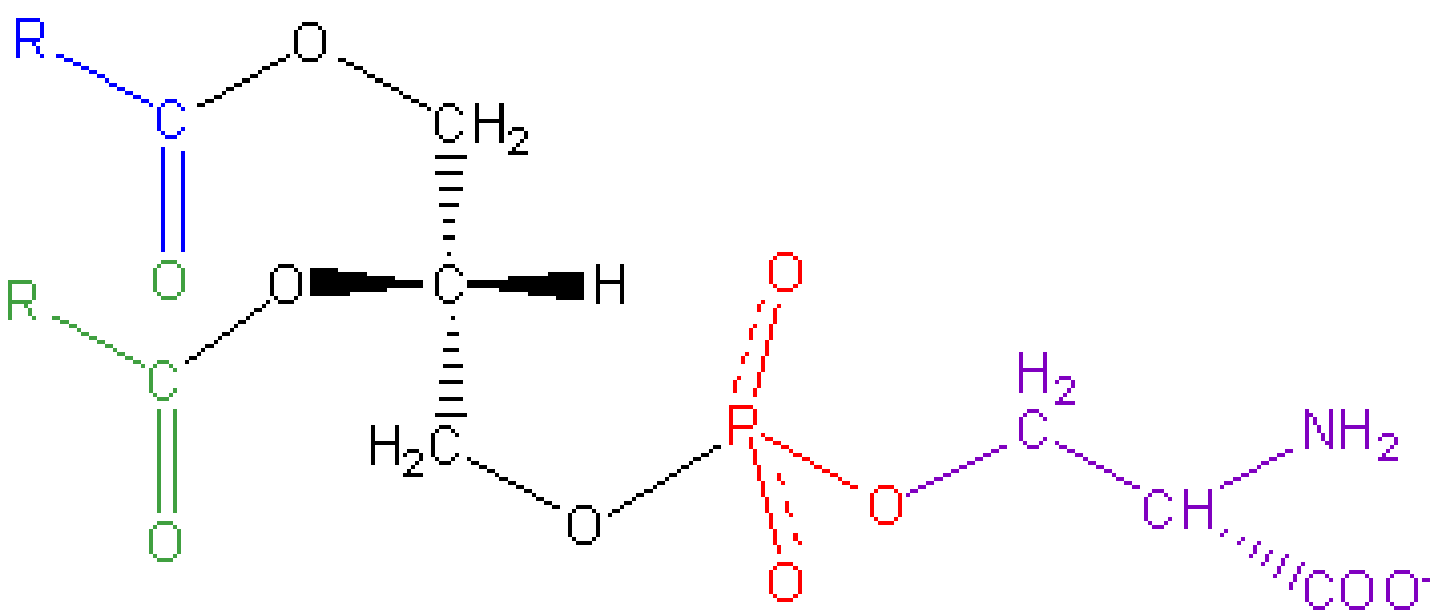
Chang CY[1], Ke DS, Chen JY.

Abstract

The human brain is nearly 60 percent fat. We've learned in recent years that fatty acids are among the most crucial molecules that determine your brain's integrity and ability to perform. Essential fatty acids (EFAs) are required for maintenance of optimal health but they can not synthesized by the body and must be obtained from dietary sources. Clinical observation studies has related imbalance dietary intake of fatty acids to impaired brain performance and diseases. Most of the brain growth is completed by 5-6 years of age. The EFAs, particularly the **omega-3 fatty acids, are important for brain development during both the fetal and postnatal period.** Dietary decosahexaenoic acid (DHA) is needed for the optimum functional maturation of the retina and visual cortex, with visual acuity and mental development seemingly improved by extra DHA. Beyond their important role in building the brain structure, EFAs, as messengers, **are involved in the synthesis and functions of brain neurotransmitters,** and in the molecules of the immune system. Neuronal membranes contain phospholipid pools that are the reservoirs for the synthesis of specific lipid messengers on neuronal stimulation or injury. These messengers in turn participate in signaling cascades that can either promote neuronal injury or neuroprotection. The goal of this review is to give a new understanding of how EFAs determine our brain's integrity and performance, and to recall the neuropsychiatric disorders that may be influenced by them. As we further unlock the mystery of how fatty acids affect the brain and better understand the brain's critical dependence on specific EFAs, correct intake of the appropriate diet or supplements becomes one of the tasks we undertake in pursuit of optimal wellness.

Phosphatidylserine

- In 2003 FDA allowed the health claim:
  "Consumption of phosphatidylserine may reduce the risk of dementia and cognitive dysfunction in the elderly.“
- Source of acetylcholine, a neurotransmitter needed for memory & learning
- Lecithin is also a good source of acetylcholine



Phosphatidylserine and the human brain

OBJECTIVE:

The aim of this study was to assess the roles and importance of phosphatidylserine (PS), an endogenous phospholipid and dietary nutrient, in human brain biochemistry, physiology, and function.

METHODS:

A scientific literature search was conducted on MEDLINE for relevant articles regarding PS and the human brain published before June 2014. Additional publications were identified from references provided in original papers; 127 articles were selected for inclusion in this review.

RESULTS:

A large body of scientific evidence describes the interactions among PS, cognitive activity, cognitive aging, and retention of cognitive functioning ability.

CONCLUSION:

Phosphatidylserine is required for healthy nerve cell membranes and myelin. Aging of the human brain is associated with biochemical alterations and structural deterioration that impair neurotransmission. Exogenous PS (300-800 mg/d) is **absorbed efficiently in humans, crosses the blood-brain barrier**, and safely slows, halts, or reverses biochemical alterations and structural deterioration in nerve cells. It **supports human cognitive functions, including the formation of short-term memory, the consolidation of long-term memory, the ability to create new memories, the ability to retrieve memories, the ability to learn and recall information, the ability to focus attention and concentrate, the ability to reason and solve problems, language skills, and the ability to communicate.** It also supports locomotor functions, especially rapid reactions and reflexes.

Ginkgo

- Use extract, not leaf powder
- Increases blood circulation and nutrient delivery
- Not as strong as other nootropics, but a good addition

Macuna Pruriens

- Neuroprotective Effects
- Source of Neurotransmitters
  - Serotonin- memory and learning
  - L-dopa converts to dopamine (depleted by stress)
- Used in India since 300 BC

The Magic Velvet Bean of Mucuna pruriens

ABSTRACT

"Mucuna pruriens (Fabaceae) is an established herbal drug used for the management of male infertility, nervous disorders, and also as an aphrodisiac. It has been shown that its seeds are potentially of substantial medicinal importance. The ancient Indian medical system, Ayurveda, traditionally used M. pruriens, even to treat such things as Parkinson's disease. **M. pruriens has been shown to have** anti-parkinson and **neuroprotective effects**, which may be related to its anti-oxidant activity. In addition, anti-oxidant activity of M. pruriens has been also demonstrated in vitro by its ability to scavenge DPPH radicals and reactive oxygen species. In this review the medicinal properties of M. pruriens are summarized, taking in consideration the studies that have used the seeds extracts and the leaves extracts.“

J Tradit Complment Med.2012 Oct;2(4):331-9

Comparison of the neuroprotective potential of Mucuna pruriens seed extract with estrogen in 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP)-induced PD mice model

ABSTRACT

Parkinson's disease (PD) is one of the most common neurodegenerative disease found in the aging population. Currently, many studies are being conducted to find a suitable and effective cure for PD, with an emphasis on the use of herbal plants. In Ayurveda, Mucuna pruriens (Mp), a leguminous plant, is used as an anti-inflammatory drug. In this study, the neuroprotective effect of an ethanolic extract of Mp seed is evaluated in the 1-methyl-4-phenyl-1,2,3,6-tetrahydropyridine (MPTP) model of PD and compared to estrogen, a well reported neuroprotective agent used for treating PD. Twenty-four Swiss albino mice were randomly divided into four groups: Control, MPTP, MPTP+Mp and MPTP+estrogen. The behavioural recovery in both Mp and estrogen treated mice was investigated using the rotarod, foot printing and hanging tests. The recovery of dopamine neurons in the substantia nigra (SN) region was estimated by tyrosine hydroxylase (TH), immunostaining. Additionally inducible nitric oxide synthase (iNOS) and glial fibrillary acidic protein (GFAP) immunoreactivity was evaluated to assess the level of oxidative damage and glial activation respectively. The levels of dopamine and its metabolite in the nigrostriatal region were measured by HPLC. Mp treatment restored all the deficits induced by MPTP more effectively than estrogen. Mp treatment recovered the number of TH-positive cells in both the SN region and the striatum while reducing the expression of iNOS and GFAP in the SN. Treatment with Mp significantly increased the levels of dopamine, DOPAC and homovanillic acid compared to MPTP intoxicated mice. Notably, the effect of Mp was greater than that elicited by estrogen. Mp down regulates NO production, neuroinflammation and microglial activation and all of these actions contribute to Mp's neuroprotective activity. **These results suggest that Mp can be an effective treatment for neurodegenerative diseases**, especially PD by decreasing oxidative stress and possibly by implementing neuronal and glial cell crosstalk.

Bacopa

- Known as Brahmi in India
- Improves cognition, particularly speed of attention
- Retention of new information
- How Bacopa improves memory is unclear at this time

Meta-analysis of randomized controlled trials on cognitive effects of Bacopa monnieri extract

ETHNOPHARMACOLOGICAL RELEVANCE:

Bacopa monnieri has a long history in Ayurvedic medicine for neurological and behavioral defects. To assess its efficacy in improving cognitive function.

MATERIALS AND METHODS:

MEDLINE, EMBASE, CINAHL, AMED, Cochrane Central of clinical trial, WHO registry, Thai Medical Index, Index Medicus Siriraj library and www.clinicaltrial.gov were searched from the inception date of each database to June 2013 using scientific and common synonyms of Bacopa monnieri, cognitive performance or memory. The reference lists of retrieved articles were also reviewed. Randomized, placebo controlled human intervention trials on chronic ≥ 12 weeks dosing of standardized extracts of Bacopa monnieri without any co-medication were included in this study. The methodological quality of studies was assessed using Cochrane's risk of bias assessment and Jadad's quality scales. The weighted mean difference and 95% confidence interval (95% CI) were performed using the random-effects model of the Dersimonian-Laird method.

RESULTS:

Nine studies met the inclusion criteria using 518 subjects. Overall quality of all included trials was low risk of bias and quality of reported information was high. Meta-analysis of 437 eligible subjects showed improved cognition by shortened Trail B test (-17.9 ms; 95% CI -24.6 to -11.2; $p<0.001$) and decreased choice reaction time (10.6 ms; 95% CI -12.1 to -9.2; $p<0.001$).

CONCLUSION:

This meta-analysis suggests that **Bacopa monnieri has the potential to improve cognition, particularly speed of attention** but only a large well designed 'head-to-head' trial against an existing medication will provide definitive data on its efficacy on healthy or dementia patients using a standardized preparation.

Chronic effects of Brahmi (Bacopa monnieri) on human memory

ABSTRACT

A study is reported on the effects of Brahmi (Bacopa monniera) on human memory. Seventy-six adults aged between 40 and 65 years took part in a double-blind randomized, placebo control study in which various memory functions were tested and levels of anxiety measured. There were three testing sessions: one prior to the trial, one after three months on the trial, and one six weeks after the completion of the trial. The results show a significant effect of the Brahmi on a test for the retention of new information. Follow-up tests showed that the rate of learning was unaffected, suggesting that Brahmi **decreases the rate of forgetting of newly acquired information**. Tasks assessing attention, verbal and visual short-term memory and the retrieval of pre-experimental knowledge were unaffected. Questionnaire measures of everyday memory function and anxiety levels were also unaffected.

Neuropsychopharmacology. 2002 Aug;27(2):279-81.

Lion’s Mane

- Used in traditional Chinese medicine
- Helps to regulate blood lipid and blood glucose levels
- Increases nerve growth factor secretions. NGF is a protein that is vital to the growth and maintenance of neurons in the brain
- Contributes to long-term brain health

Improving effects of the mushroom Yamabushitake (Hericium erinaceus) on mild cognitive impairment: a double-blind placebo-controlled clinical trial.

Abstract

A double-blind, parallel-group, placebo-controlled trial was performed on 50- to 80-year-old Japanese men and women diagnosed with mild cognitive impairment in order to examine the efficacy of oral administration of Yamabushitake (Hericium erinaceus), an edible mushroom, for improving cognitive impairment, using a cognitive function scale based on the Revised Hasegawa Dementia Scale (HDS-R). After 2 weeks of preliminary examination, 30 subjects were randomized into two 15-person groups, one of which was given Yamabushitake and the other given a placebo. The subjects of the Yamabushitake group took four 250 mg tablets containing 96% of Yamabushitake dry powder three times a day for 16 weeks. After termination of the intake, the subjects were observed for the next 4 weeks. At weeks 8, 12 and 16 of the trial, the Yamabushitake group showed significantly increased scores on the cognitive function scale compared with the placebo group. The Yamabushitake group's scores increased with the duration of intake, but at week 4 after the termination of the 16 weeks intake, the scores decreased significantly. Laboratory tests showed no adverse effect of Yamabushitake. The results obtained in this study suggest that Yamabushitake is effective in improving mild cognitive impairment.

Vinpocetine

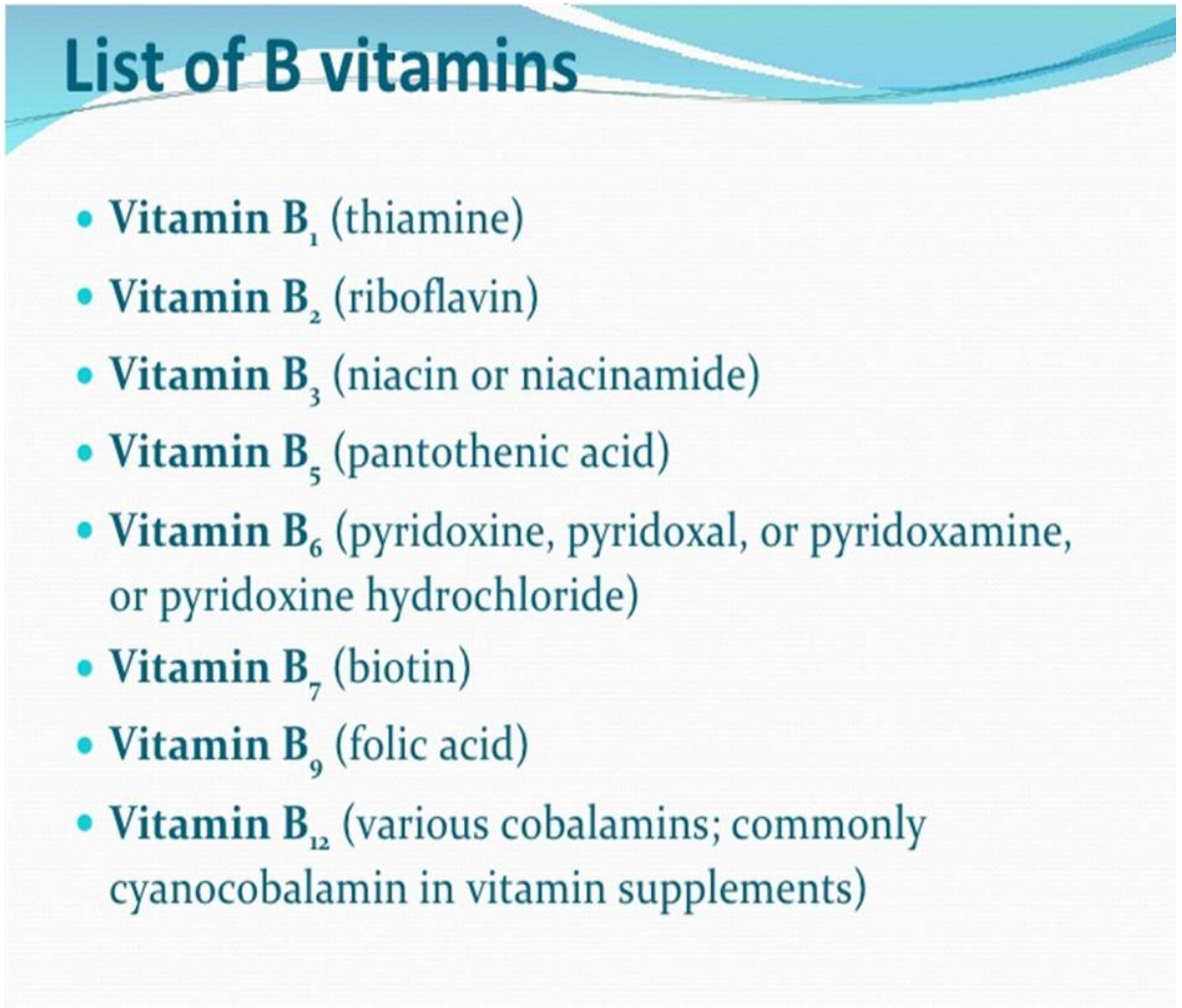
- Semi-synthetic alkaloid isolated from the periwinkle plant
- Vasodilator that enhances cerebral blood flow

Huperzine A

- Derived from fir moss
- Increases acetylcholine which is a neurotransmitter needed for memory and learning
- Low levels of acetylcholine are linked to cognitive decline
- Huperzine A increases acetylcholine by inhibiting the enzyme that breaks down acetylcholine (acetylcholinesterase)
- Acetylcholinesterase is necessary for other functions in the body, lack can cause side effects

B Vitamins

- **Slow brain shrinkage in adults over 70**
- **Elevated homocysteine causes brain shrinkage. Folate, B12 and B6 reduce homocysteine**
- **Use only non-synthetic**
  - **over 90% of "natural vitamins" in health food stores are actually synthetic**



“Anti-Nootropics“: Avoid these:

- Flu vaccinations usually contain mercury and aluminum, well-known neurotoxins
- Fluoride decreases IQ
- Amalgam fillings, 50% mercury
- Fish high in mercury
- Antiperspirants containing aluminum
- Non-stick cookware

Stress

- Inhibits cognitive functioning
- Find ways to de-stress
  - Yoga
  - Meditation
  - Exercise
  - Pets (i.e. a dog that provides unconditional love)
  - Comedy
  - Etc.

Oxidative Stress

- **Caused by reactive oxygen species also known as free radicals**
- **Involved in the development of Alzheimer's**
- **Linked to consumption of cooked omega 6 and arachidonic acid**
- **Amp-up your ability to detoxify free radicals and repair the resulting damage**
- **Eliminate nutritional deficiencies, good nutrition is key**

- **Increase consumption of antioxidants**
  -Superfoods
  -Raw food
  -Dark chocolate
  -Berries
  -Etc.
  -Astaxanthin crosses the blood-brain barrier and can prevent neurodegeneration associated with oxidative stress

Causes of Oxidative Stress

http://www.geneactivatornrf2.org/gmo-food-health-oxidative-stress-nrf2/#.Viqc2X6rTrf

In a Nutshell: Dr. Sommers' Top 5

1. **B Vitamins**
2. **Omega 3**
3. **Phosphatidylserine**
4. **Bacopa**
5. **Ginkgo**