

# Brain Vibrance Supreme™ Powder: The Big 3 Nutrients for Brain Vitality and Repair

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**R**obert Crayhon, MS, founder of Crayhon Research Inc., developed Brain Vibrance Supreme™ Powder. This potent supplement has an enthusiastic following among healthcare professionals. The 3 nutrients in Brain Vibrance Supreme™ Powder help the brain generate energy, process signals, and generally manage its vast array of housekeeping and specialized functions. Brain Vibrance Supreme™ Powder offers unique promise to support self-repair in the brain.

The human brain is a metabolic dynamo that weighs a mere 3 pounds yet demands at least one-fifth of our oxygen and blood sugar even when at rest. To support this intense activity it also requires the full spectrum of nutrients. Three nutrients stand out from the rest for their proven clinical benefits, their safety of use, and their contributions to brain vitality and renewal.

## The Three Most Proven Brain Nutrients: PS, GPC, AC

The peer-reviewed scientific literature on 3 brain nutrients has elevated them above the rest. These are PS (phosphatidylserine),

### Indications for Use

#### Brain Vibrance Supreme™ Powder nutritionally supports:

- Attention and total mental focus in healthy young people
- Homeostatic management of mood, anxiety, and the stress response
- Memory, learning, comprehension, and other cognitive functions
- Enhanced mental sharpness and endurance at any age
- Mind-body functional integration, via multiple overlapping mechanisms
- Revitalization of declining mental performance
- Brain repair and other intrinsic restorative processes
- Pituitary vitality and growth hormone tone
- Brain tissue responsiveness to intrinsic nerve growth factor
- Brain cell responsiveness to chemical transmitters
- Sociability and activities of daily living in the elderly (grooming, toilet, other essential functions).

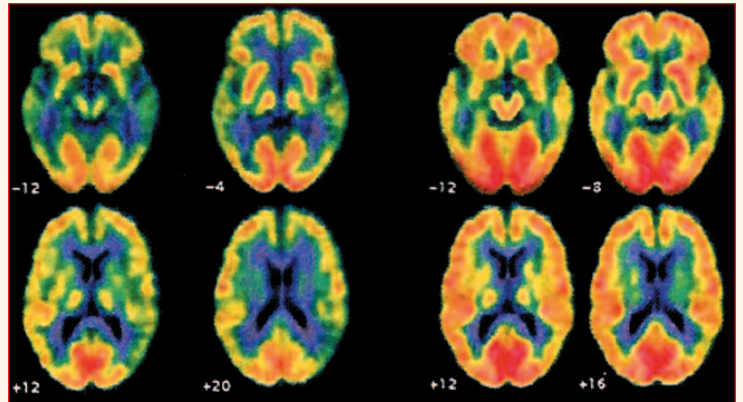


Figure 1. PET (Positron Emission Tomography) scans of 4 brain levels, averaged from several Alzheimer's patients before and after their brains were injected with cells that hypersecreted nerve growth factor (NGF). The 4 scans on the right were made 6-8 months after those on the left. Color bar (center) shows that yellow and red areas are up to 3 times more energized than other areas. From Tuszynski and others, in *Nature Medicine* (see text).

GPC (glycerophosphocholine), and AC (acetylcarnitine). Think of them as the Big 3 nutrients for brain vitality and repair.

The Big 3 brain nutrients all are *orthomolecules*, *molecules orthodox* to the body, as first recognized by Professor Linus Pauling, Nobel Laureate in Chemistry. Being orthomolecular means these nutrients occur naturally in all our cells and are deeply rooted in our life processes. This fundamental role in nutrition translates not just into exceptional efficacy, but also into exceptional safety since our cells are literally built on these molecules. The Big 3 brain nutrients are all very well absorbed, and have numerous action mechanisms that overlap to reinforce each other's effects on cognition, mood, and mental endurance.

## PS, Brain Booster for Memory, Cognition, Mood, Stress

PS (phosphatidylserine, pronounced *fos-fa-tie-dil-ser-eeen*) is a phospholipid nutrient and cell membrane building block. Cells function on their membranes, and within the membrane PS enwraps important proteins to create an appropriate "microenvironment" for each to function. The findings from some

22 double-blind clinical trials conducted with PS indicate diverse and marked benefits for the brain. The author's book *PS (PhosphatidylSerine), Brain Booster for Memory, Mood and Stress*, details the many benefits of PS for people of all ages.

The 1991 US double-blind trial conducted on PS by Crook and his associates was a breakthrough (see **References**). This internationally renowned research team recruited subjects over 50 years of age who were clinically healthy, yet had measurable impairment of their memory and other cognitive functions. They gave the patients PS at 300 mg per day for 3 months. Out of this well designed trial came data that indicated PS could restore several years' worth of functional mental performance. The US FDA was sufficiently impressed by the research to allow two qualified health claims for PS: one for dementia and one for cognitive dysfunction in the elderly.

For subjects with severe cognitive difficulties, PS used by itself is not a panacea. But multiple double-blinded trials suggest PS often improves quality of life, sociability (willingness to interact with others), and "activities of daily living" such as personal grooming and self-feeding. PS also often improves mood, ability to cope with anxiety, and hormonal rhythms based in the pituitary. Brain imaging shows that PS can enhance energy production in the brain.

PS also helps young, healthy individuals. In several double-blind trials with subjects under 30 years of age, PS down-regulated blood cortisol levels while improving mental or physical performance under stress.

### **GPC, Mind-Body Nutrient for Active Living and Healthy Aging**

GPC (glycerophosphocholine, pronounced *gli-sero-fos-fo-ko-lean*) is (like PS) also a phospholipid nutrient with marked clinical benefits. But GPC exists in a different cellular subworld than does PS. While PS is found solely within cell membranes, GPC is a water-phase (cytoplasmic) phospholipid. As the water phase is much larger in volume than the membrane phase, GPC can build up to very high levels in our cells. Attaining these routine high levels gives GPC the power to play many important roles in human brain tissue.

GPC is a highly protective nutrient, including being a rare osmotic regulator and urea buffer. This chemical property alone makes GPC valuable for the brain, as it is for the kidneys and other organs. GPC is one of a few nutrients that can be used to regulate or fine-tune osmotic forces that could tear the cell apart. Also, GPC is perhaps the only nutrient that can effectively keep urea from damaging cells.

GPC is a reservoir for the essential nutrient choline. GPC has choline as part of its molecular structure, easily pulled away by enzymes that use very little energy. Choline is very important for brain development and maintenance, so much so that human mother's milk contains substantial amounts of GPC as its readily available choline source. The GPC in mother's milk also is an energy-effective starting source for the phospholipids necessary for cell membrane expansion and cell proliferation.

When used as a dietary supplement, GPC readily elevates choline levels in the brain. Choline building up in the brain from GPC can also boost acetylcholine synthesis, with the acetyl group coming (partly, at least) from acetylcarnitine. The author's book *GPC (GlyceroPhosphoCholine), Mind Body Power for Active Living and Healthy Aging*, gives the full story on GPC and its remarkable benefits for stroke and brain injury as well as for cognition and mental endurance.

### **AC (Acetylcarnitine) for Energy and Mitochondrial Performance**

AC (acetylcarnitine) is the third blockbuster brain nutrient in Brain Vibrance Supreme™ Powder. This is a nutrient essential for making energy, without which the brain could not get anything done. Abundant life energy is crucial in order for PS and GPC to have their revitalizing effects in fatigued brain cells and circuits.

AC has at least two major modes of action. One is to help transport fatty acids into the mitochondria, the energy factories of our cells. These are then used to make ATP, the chemical "energy currency" of life. Here AC biochemically overlaps with PS, which helps support the mitochondrial membranes.

The other main function of AC is to provide acetyl groups, which are used to regulate many metabolic pathways. Acetyl groups drawn from AC also go to make acetylcholine, a chemical transmitter that operates between nerve cells inside and outside the brain. Acetylcholine also powers the nerve-muscle junctions that trigger voluntary muscle contraction. Further, this ubiquitous messenger also underlies the activity of the autonomic nervous system as it regulates our unconscious functions.

There are some 21 double-blind trials on AC for brain and other nervous system applications. The myriad positive effects of AC prove that just by energizing its cells, a chain of positive processes are set in motion that can result in brain repair and regeneration.

Altogether, the brain benefits of these Big 3 brain nutrients have been explored in more than 60 published randomized controlled trials, hundreds of other human studies,

and thousands of experimental studies. They are a mutually supportive triad of nutrients, with diverse action mechanisms that support nerve networks throughout the body, and with excellent safety and tolerability due mainly to their orthomolecular nature.

### The Big 3 Nutrients Help the Human Brain Repair Itself

Until very recently the human brain was thought incapable of any substantial self-repair once damaged. Until stem cells were discovered in the brain, that is. Now it is clear that our brains are actually quite *plastic*—capable of making new circuits if provided with the necessary cofactors for the task.

Stem cells make it possible for the brain to make new cells that then become functional as new circuits. Previously the human brain was assumed to lack stem cells. But just in the 1990's decade stem cells were found in the hippocampus (the major zone for initiating new memories), in the cortex, and other brain zones.

Experiments with rats, mice, and monkeys have demonstrated that under suitable conditions, stem cells can become active and make new circuits in the working brain. In animal models of stroke, for example, new nerve cell formation, new circulation, and a degree of structural and functional recovery are seen in the damage zone.

One important condition for making new brain circuits from stem cells is sensory stimulation. Another is the presence of adequate levels of growth factors. These are a class of small protein messenger substances, naturally produced and released in every healthy tissue. The quality and quantity of stimuli reaching the brain affect growth factor status, which in turn affects stem cell activity.

Nerve growth factor or NGF was the first growth factor to be discovered. Clinical researchers at the University of California at San Diego did a small clinical trial ("Phase I") that probed the importance of NGF in the human brain. The outcome was reported in *Nature Medicine* in 2005 (volume 11, pages 551-5). When NGF release was upregulated in one brain zone, new circuits formed. Functional imaging revealed that these brains made more energy, and that the progression of early Alzheimer's was slowed (see Fig.1).

The enhancement of NGF levels through this high-tech intervention had fostered new brain circuits, improved energetics in the brain, and partially slowed the dementia

### Using Brain Vibrance Supreme™ Powder for Nutritional Support

(Try always to take in the morning with food)

\*, \*\* Indicate probable additional benefit from Brain Vibrance Supreme™ Powder.

Attention, Mental Focus	1 teaspoon (3 grams), double for first month
Overall Mental Performance*	1 teaspoon (3 grams), double for first month
Mood Control, Stress, Anxiety**	1 teaspoon (3 grams), double for first month
Memory Difficulties*	1 teaspoon (3 grams), double for first month
Spreading Cognitive Impairment**	2 teaspoons (6 grams), ongoing
Brain Repair**	2 teaspoons (6 grams), ongoing
Sociability, Activities of Daily Living**	2 teaspoons (6 grams), ongoing

\* Consider combining with 1 serving PS/Omega-3 Synergy™

\*\* Consider combining with 2 servings PS/Omega-3 Synergy™

progression. But such radical steps may not be necessary—the Big 3 brain nutrients all enhance natural NGF action in the brain, and are the only agents so far proven to have this effect. Fig. 2 illustrates the conservation of NGF receptor action in the aging rat brain by PS. GPC and AC have shown similar effects.

### How to Take Brain Vibrance Supreme™ Powder

The minimum recommended daily dose of this dietary supplement is 3 grams per day (one teaspoon), taken with a meal. This dose provides half the full clinical intake of each nutrient: 150 mg PS, 600 mg GPC and 750 mg AC. For faster and more complete results, we recommend doubling the minimum intake for at least the first month. This would be 6 grams powder, providing the full clinical potencies of 300 mg PS, 1200 mg GPC, 1500 mg AC. We have received anecdotal reports of encouraging benefits from people who took the double dose for at least 1-3 months.

Brain Vibrance Supreme™ Powder can be highly energizing for the brain. We strongly suggest taking it with the first meal of the day, to minimize any chance of staying up past bedtime.

Brain Vibrance Supreme™ Powder is not recommended for children. A Russian study suggests GPC can be markedly beneficial for children, but at much lower intakes than for adults (Krasnoperova, 2004). Children under 18 can be started (under professional supervision) at 300 mg GPC every other day using Crayhon's GPC Daily 300, and their intake doubled after 2 weeks to a maximum 600 mg GPC per day.

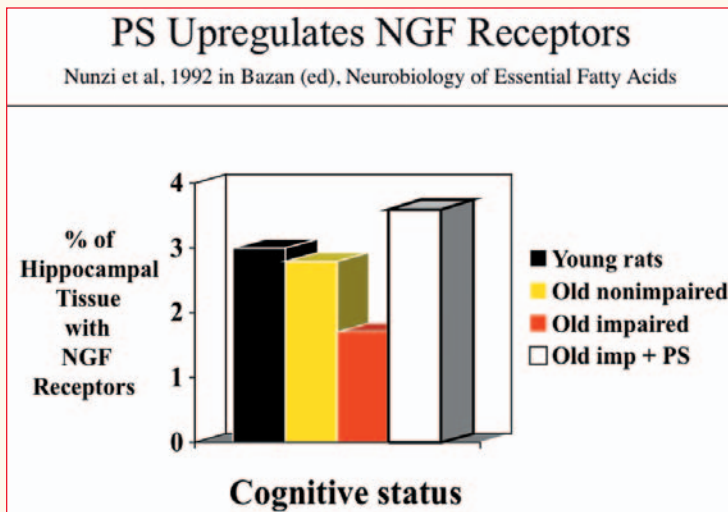


Figure 2. PS Upregulates NGF Receptors

### Commonly Asked Questions About Brain Vibrance Supreme™ Powder

**Q.** *When will I start feeling the benefits of this dietary supplement?*

**A.** We expect many people will begin noticing improvement after 1-3 weeks, and that their improvement will progress over months as they continue to take the product.

**Q.** *Are any of these nutrients allergenic?*

**A.** PS and GPC are initially made from soy lecithin, but are highly purified and contain no allergenic soy residuals whatsoever. As with all other Crayhon products, this formulation has no hidden additives and was designed to be hypoallergenic.

**Q.** *Why take this supplement in the morning?*

**A.** The potent orthomolecules in Brain Vibrance Supreme™ Powder can be highly energizing for the brain. Taking it later in the day could keep the mind active past bedtime.

**Q.** *How does this product compare with other Crayhon brain products?*

**A.** Individuals seeking the most optimal long-term brain benefits should consider taking PS/Omega-3 Synergy™ in conjunction with this product. Both are designed to be taken along with Crayhon's Body Vibrance™ multivitamin mineral supplement.

**Q.** *What are the highest safe intakes of these various brain nutrients?*

**A.** Proven safe maximum intakes of these various brain nutrients for adults are (per day): PS 500 mg, GPC 1.2 grams, AC 3 grams. The total (DHA+EPA) obtained from PS/Omega-3 Synergy™ is comfortably safe up to 2 grams per day (4 softgels).

In summary, Brain Vibrance Supreme™ Powder is a premier dietary supplement for mental performance, brain vitality, and restoration of brain function following damage. For best results with this supplement, follow a healthy diet and do mental as well as physical exercise several times a week. The related Brain Vibrance Supreme™ Gel Shot supplement adds blueberry to this potent mix of the Big 3 brain nutrients. Ask about it.

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