

GPC

(GlyceroPhosphoCholine)

Research shows that GPC can improve:

- Memory/mental focus function in elderly and young
- Mood status
- Growth Hormone production
- Brain recovery from stroke or injury or anesthesia
- Age-related changes in brain function
- Impairment in cognition and social behavior due to Alzheimer's or vascular dementia

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Intensive Brain Support

GPC (also known in the research literature as L-alpha-glycerylphosphorylcholine or choline alfoscerate) is a naturally occurring molecule in all the body's cells and mother's milk. GPC is an "activated" form of choline, the difference stemming from the addition of a phosphate and glycerol group (see Figure 1 below).

Unlike Phosphatidyl Choline, GPC is water soluble, it crosses the blood brain barrier, and it requires less energy on the pathway to acetylcholine synthesis or addition of specific brain fatty acids such as DHA.¹

In humans, GPC taken by mouth is well absorbed and increases plasma levels of choline for up to ten hours. Research with animals using radio labeled GPC suggests GPC becomes incorporated into many other regulatory and structural molecules with various functions:

- a methyl group source for gene-level and other metabolic control
- as a precursor to acetylcholine, which is used in the brain as a neurotransmitter and the rest of the body as a messenger/regulator (muscle contraction, organ function, skin tone, blood vessel volume, platelet aggregation)
- for incorporation into choline phospholipids such as phosphatidyl choline and sphingomyelin in every cell membrane and myelin sheath.

At least twenty-three clinical trials have been done with GPC, all of them with positive outcomes^{2,3}:

- improvements in attention, mental focus, recall, and other higher mental functions (cognition), including in young healthy subjects,^{3,4} whether linked to poor brain circulation or of the Alzheimer's type⁵
- brain recovery following stroke or other circulatory injury⁶⁻⁸
- revitalizes master hormone functions from pituitary control (such as Growth Hormone) in the elderly⁹

The typical oral doses of GPC used in most trials were 1200 mg per day in divided doses, in order to maintain the plasma levels at a high level throughout 24 hrs.

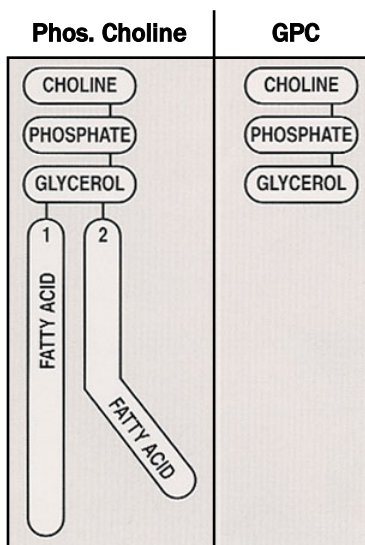


Figure 1

Compared with other dietary "cholinergic precursors" such as choline, phosphatidyl choline or (citicholine), GPC had superior benefits.¹⁷

GPC outperformed the nutraceutical citicholine (cytidine diphosphocholine or CDP Choline) in three direct comparison trials.¹⁸⁻²⁰

In comparison with prescription drugs GPC showed to be:

- better than Oxiracetam²¹
- similar to the Donepezil and superior to Rivastigmine, both of which are acetylcholinesterase inhibitor drugs³³

In all the trials GPC improved overall clinical symptoms such as:

- cognition, affective symptoms, and somatic symptoms such as fatigue and dizziness
- Memory, attention, other cognitive measures, and mood
- disorientation, irritability, emotional stability, and indifference to surroundings

In a study of advanced Alzheimer's patients, GPC performed roughly twice as well as acetyl-L-carnitine.²⁵

The largest stroke trial used 176 hospital centers within Italy and 2,044 patients, and showed that GPC significantly helped more than 95 percent of the patients.⁷

GPC supports other neurotransmitter systems such as dopamine, norepinephrine, and GABA⁴¹, improves EEG (ElectroEncephaloGraphic) patterns, and reduces the delta or "slow waves" which are increased during aging or accelerated cognitive deterioration.⁴³

REFERENCES

1. Kidd P. GPC (GlyceroPhosphoCholine), Ortho-Nutraceutical For Active Living and Healthy Aging. Townsend Letters. ...SOON TO BE PUBLISHED
3. Canal N, et al. Effect of l-alpha-glycerol-phosphorylcholine on amnesia caused by scopolamine. *International J Clin Pharmacol Therapy Toxicol* 1991;29:103.
4. Canal N, et al. Comparison of the effects of pretreatment with choline alfoscerate, idebenone, aniracetam and placebo on scopolamine-induced amnesia. *Le Basi Raz Ter* 1993;23:102.
5. Parnetti L, Amenta F, Gallai V. Choline alfoscerate in cognitive decline and in acute cerebrovascular disease: an analysis of published clinical data. *Mechs Ageing Dev* 2001;22:2041.
6. Aguglia E, et al. Choline alfoscerate in the treatment of mental pathology following acute cerebrovascular accident. *Funct Neurol* 1993;8 (Suppl):5.
7. Barbagallo Sangiorgi G, et al. alpha-glycerophosphocholine in the mental recovery of cerebral ischemic attacks. *Ann N Y Acad Sci* 1994;717:253.
8. Tomasina C, et al. Clinical study of the therapeutic effectiveness and tolerability of choline alfoscerate in 15 subjects with compromised cognitive functions subsequent to acute focal cerebral ischemia. *Rivista Neuropsi Sci Affini* 1996;37:21.
9. Ceda GP, et al. Effects of an acetylcholine precursor on GH secretion in elderly subjects. In: Bercu, BB, Walker, RF, eds. *Growth Hormone II: Basic and Clinical Aspects*. Springer-Verlag;1994.
17. Amenta F, et al. Treatment of cognitive dysfunction associated with Alzheimer's disease with cholinergic precursors. Ineffective treatments or inappropriate approaches? *Mechs Ageing Dev* 2001;122:2025.
18. Di Perri R, et al. A multicentre trial to evaluate the efficacy and tolerability of alphasglycerylphosphorylcholine versus cytosine diphosphocholine in patients with vascular dementia. *J Intl Med Res* 1991;19:330.
19. Frattola L, et al. Multicenter clinical comparison of the effects of choline alfoscerate and cytidine diphosphocholine in the treatment of multi-infarct dementia. *Curr Therap Res* 1991;49:683.
20. Muratorio A, et al. A neurotropic approach to the treatment of multi-infarct dementia using Lalpha-glycerol-phosphorylcholine. *Curr Ther Res* 1992;52:741.
21. Paciaroni E, Tomassini PF. Clinical study of effectiveness and tolerability of alpha-GFC (choline alfoscerate) vs. oxiracetam in patients suffering from slight/moderate cognitive defect of vascular origin. *Gior Ital Rech Clin Terap* 1993;14:29.
22. Ban TA, et al. Choline alfoscerate in elderly patients with cognitive decline due to dementing illness. *New Trends Clin Neuropharmacol* 1991;5:87.
23. Palleschi M, et al. Evaluation of effectiveness and tolerability of alpha-GFC (choline alfoscerate) in patients suffering from slight/moderate cognitive decline. Preliminary results. *Geriatrics* 1992;4:13.
25. Parnetti L, et al. Multicentre study of l-a-glycerol-phosphorylcholine vs ST200 among patients with probable senile dementia of Alzheimer's type. *Drugs & Aging* 1993;3:159.
33. Wirthenson G, et al. Role and regulation of glycerophosphocholine in rat renal papilla. *Pflu(e)gers Arch*. 1987;409:411.
41. Ferraro L, Tanganelli S, Marani L, et al. Evidence for an in vivo and in vitro modulation of endogenous cortical GABA release by alpha-glycerol-phosphorylcholine. *Neurochem Res* 1996;21:547.
42. Schettini G, et al. Molecular mechanisms mediating the effects of l-alpha-glycerol-phosphorylcholine, a new cognition-enhancing drug, on behavioral and biochemical parameters in young and aged rats. *Pharmacol Biochem Behavior* 1992;43:139.
43. Lacomba C, et al. Effects of l-alpha-glycerol-phosphorylcholine on the EEG power spectrum in the rat. *Drug Dev Res* 1992;26:101.
44. Infante JP. Defective synthesis of polyunsaturated phosphatidylcholines as the primary lesion in Duchenne and murine dy muscular dystrophies. *Med Hypoth* 1986;19:113.

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