

# PS 150

150 mg non-soy, sunflower-sourced phosphatidylserine



By David M. Brady, ND, DC, CCN, DACBN, IFMCP, FACN & Amy Berger, MS, CNS

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**Phosphatidylserine (PS)** is a crucial component of cell and mitochondrial membranes and thus is essential for optimal brain function. It accounts for as much as 15% of the phospholipids in the human cerebral cortex and influences signaling processes that play a role in neuronal survival, neurite growth and synaptogenesis, as well as modulating neurotransmitter release and receptor function.<sup>1</sup> Because PS is fundamental for the overall viability and proper functioning of brain cells, research has shown that it benefits a range of brain activities. There are no foods rich in PS except for brain (which, of course, is not recommended as a food), so PS supplementation may be the best way to increase levels of this valuable brain nutrient. PS is synthesized endogenously (using either phosphatidylcholine or phosphatidylethanolamine as a precursor, along with substantial amounts of the omega-3 fatty acid DHA<sup>1,2</sup>), but synthesis declines during the aging process and certain situations may increase the need for it, so supplementation may be warranted for some individuals.

#### Phosphatidylserine may help to\*:

- Support mental focus
- Support healthy cortisol levels
- Support a healthy mood
- Lessen the effect of seasonal affective disorder
- Improve quality of life in Alzheimer's patients
- Maintain healthy memory

#### Age-Related Memory Loss

Many individuals experience some degree of memory loss and decline in cognitive function as they age. PS may help to reverse or slow this process.<sup>3</sup> Patients with age-related memory impairment or dementia given PS have shown improved performance on tests related to learning and memory tasks of daily life.<sup>3,4</sup> A review in the journal *Nutrition* noted, "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," and more.<sup>5</sup> Among younger individuals, PS may be beneficial for improving memory and symptoms of attention deficit hyperactivity disorder (ADHD), as was shown in a double-blind RCT of children ages 4-14 not previously treated for the condition.<sup>6</sup>

#### Alzheimer's Disease

While there is currently no cure for Alzheimer's disease (AD), PS has shown promise for helping to slow the progression of this disease.<sup>7,8</sup> One of the hallmarks of AD is reduced cerebral glucose metabolism. PS supplementation has been shown to increase this as much as 20%, although significant symptomatic improvement was not seen.<sup>9</sup> Other research indicates that PS does positively impact brain function in subjects with probable AD but that this effect diminishes over time.<sup>10</sup> It is possible that PS may be more effective if used in combination with other interventions rather than as a standalone treatment. Research in subjects with AD has shown that PS doses of 300-400 mg/day for 12 weeks to 6 months typically result in modest improvements in memory, recall and overall brain function.<sup>11-15</sup> Subjects with AD taking PS showed a lower rate of deterioration and a higher rate of stability in daily functioning compared to those on placebo.<sup>13</sup> Rodent research has shown that PS increases superoxide dismutase (SOD) levels and decreases acetylcholinesterase levels.<sup>14</sup> (Inhibition of acetylcholinesterase is the mechanism of action of some pharmaceutical drugs used for AD.)

#### Depression

The effects of phosphatidylserine on cognitive, affective and behavioral symptoms were studied in a small cohort of elderly women with depressive disorders. Compared to placebo, supplementation with PS (300 mg/day for 30 days) induced consistent improvement of depressive symptoms, memory and behavior.<sup>16</sup> More recent research has shown that PS supplementation combined with EPA & DHA improves depressive scores (assessed via HAM-D17) in elderly subjects with major depression and that this improvement is linked to reductions in salivary cortisol, with responders (>25% improvement in HAM-D17) having much larger reductions in cortisol compared to non-responders (<25% improvement).<sup>17</sup>

## PS, Stress, and Hormones

Research shows that PS helps normalize cortisol levels when the body is under stress, including psychological stress. Pre-treatment with PS and phosphatidic acid resulted in “a pronounced blunting of both serum ACTH and cortisol, and salivary cortisol responses” to induced mental stress.<sup>18</sup> This effect was seen with a 400 mg dose but not with 600 mg and 800 mg doses, raising the possibility that there may be a “sweet spot” for PS supplementation in the case of mental stress where increasing doses bring diminishing returns. Healthy male subjects given 400 mg PS plus 400 mg phosphatidic acid (a precursor to PS) showed normalized salivary and serum ACTH and cortisol levels compared to placebo. This result was observed in subjects defined as “chronically high-stressed,” but not in those with lower stress. It could be that lower-stressed individuals have less exaggerated stress responses to begin with and would therefore benefit less from substances that target a lowering of cortisol.<sup>19</sup> These findings confirmed earlier research in which a combined PS plus omega-3 supplement was found to have a more powerful favorable impact on the stress response in a group of healthy men with high chronic stress compared to those with lower regular stress levels.<sup>20</sup>

Other PS research has been conducted using exercise as a means of producing stress, as exercise-induced stress can trigger an excessive cortisol response. Results consistently demonstrate that PS promotes healthy hormone levels by reducing the cortisol response to acute exercise-induced stress and therefore, PS may help stave off the negative effects that accompany too much exercise, such as substandard performance, potential injury, and a lowered immune response.<sup>21-23</sup>

A small study involving PS supplementation in healthy males showed that PS lowered cortisol after moderate intensity exercise. It also resulted in slightly elevated testosterone levels (within normal range), which supports evidence that high cortisol levels may impair testosterone production. By lowering cortisol and raising testosterone, PS administration increased the testosterone/cortisol ratio, whereas a low T/C ratio has been used to indicate the undesirable state of overtraining, compared to a more suitable amount or intensity of exercise.<sup>23</sup>

## Supplement Facts

Serving Size 1 capsule

Amount Per Serving	% Daily Value
Phosphatidylserine (from sunflower lecithin)	150 mg *

\*Daily Value not established.

**Other Ingredients:** Microcrystalline cellulose, cellulose (capsule), silicon dioxide, vegetable stearate.

**Recommended Use:** Take one capsule per day, or as directed by your health care practitioner.

- Most studies in humans where PS has been used to optimize brain function used 300 mg of PS per day. Long term supplementation at 100-200 mg per day may be sufficient for most adults to maintain optimal brain levels PS; higher doses have been used for athletes.
- If PS is being used to help with any medical condition, or if an individual is taking medications (especially psychotropic medications), PS must be taken under the guidance of a health care practitioner.
- Docosahexaenoic acid (DHA) “promotes membrane-targeted signaling events involved in cell survival at least in part through PS accumulation in neuronal membranes.”<sup>24</sup> Consider using Designs for Health’s OmegAvail™ Ultra DHA (500 mg DHA + 102 mg EPA per capsule) in combination with PS 150 to support brain health and neuronal viability.

*For a list of references cited in this document, please visit:*

<http://www.designsforhealth.com/techsheet-references/ps-150-references.pdf>

Dosing recommendations are given for typical use based on an average 150 pound healthy adult. Healthcare practitioners are encouraged to use clinical judgement with case-specific dosing based on intended goals, subject body weight, medical history, and concomitant medication and supplement usage.

**\*These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.**

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