



PS and PS Plus

Phosphatidylserine (PS) and Phosphatidylserine – Phosphatidic acid complex (PS Plus) may offer protection against age-related loss of memory function, mild cognitive impairment and Alzheimer’s disease

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Old age dementia and Alzheimer’s disease affect an increasing part of the population in Western societies. The most prevalent form – Alzheimer’s disease (AD) – is a devastating neurodegenerative disease that gradually destroys not only neurons and synaptic connections, but a person’s sense of self. The costs for the health systems increase drastically year by year, the burden for patients, families, health professionals and caregivers is considerable and growing.

Currently, there is no medical cure available for AD patients; approved drugs can slow the progression for a certain time (generally between 6–12 months), but as much as 50 % of the patients show practically no improvement. Old-age dementia and AD develop

gradually over years and an unusual loss of memory function or amnesic mild cognitive impairment (aMCI) are taken as warning signs that carry an increased risk for progression to AD. When AD is diagnosed, the neurodegeneration is so advanced that intervention strategies come too late. If not curable – is there a way to avoid this fate? A clear „yes“ might be somewhat exaggerated, but a recent development of Israeli company Lipogen offers a more optimistic view on possibilities to intervene early in the development, or potentially prevent the diagnosis with the help of a vital nutrient: PS Plus: phosphatidylserine and phosphatidic acid (PAS) complex.

Phospholipids are the basis of all biological cell membranes. Of special importance

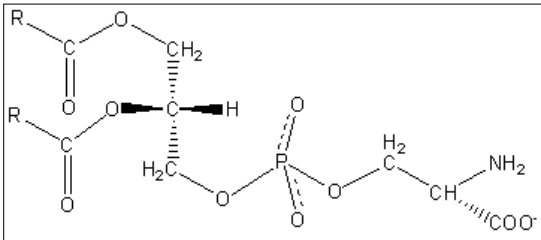
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is the phospholipid phosphatidylserine that forms up to 20 % of the healthy brain cell membranes. At the beginning of the 1990ies, PS was isolated from bovine brain tissue and applied intravenously, as well as orally – with excellent results for AD and old-age dementia patients. As early as 1990 also the stress-reducing effects of PSⁱ were reported for the first time. In the wake of the BSE developments, this approach had to be given up for obvious reasons – until in 1992 a vegetarian alternative became available: Lipogen, an Israeli company started the production of a unique soy-lecithin PS. Since the production is based on an enzymatic process and not a

bacterial fermentation step, Lipogen’s product was the first and at the time only PS to receive GRAS status in 2006 (GRAS: generally recognised as safe) by the USA FDA.

In clinical human studies, carried out in renowned institutes in Israel with AD patients, a marked influence of a supplementation with PS Plus on persons with cognitive impairment could be shown. In one study, carried out in the Geriatric Institute of Education and Research, Kaplan Medical Centre, Rehovot, and Hadassah Medical School, Hebrew University of Jerusalem one special „side effect“ in addition to the very significant and convincing results is discussed that is quite unusual: 43 % of the participants (resp. their relatives) continued to use PS Plus at their own expense *after termination of the study*: The improvements of memory functions and concentration abilities for these patients were perceived to be very significantⁱⁱ.

But not only dementia patients may benefit from a supplementation with PS. In a follow-up study of the geriatric Institute of the Kaplan Medical centres, the significance of PS Plus for healthy elder persons (72 participants between 60 to 80 years) is highlighted: Supplementation with a recently developed and patent-protected PS Plus complex resulted in a significant improvement of memory function and mood with a daily dosage as little as 300 mg PS Plus over a period of three months. Next to phosphatidylserine, PS Plus contains phosphatidic acid, another vital phospholipid which is used as a building material for essential phospholipids in the cell membrane. The natural soy lecithin PS Plus complex seems to be capable to reduce stress, and positively influence depressive moods changes often observed in the elderlyⁱⁱⁱ.

With six double-blind trials^{iv} confirming the beneficial effects of PS and further clinical trials in Israel and Germany^v about the potentially more effective actions of PS Plus on

stress, mood changes, memory functions and concentration, the supplementation of phosphatidylserine seems to offer a cheap and promising method to reduce the risks of a gradual decline of cerebral functions.

ⁱMonteleone, P, Beinatz, L, Tanzillo. C, Maj. M. and Kemali, D: Effects of phosphatidylserine on the neuroendocrine response to physical stress in humans, Neuroendocrinology 52(3), 243-248, 1990.

ⁱⁱGindin, J, Naor, S, Stovichek, Y, Dushenat, M, Konstantin, N: Effect of soy lecithin Phosphatidylserine (PS) treatment on daily functioning and self-reported general condition in patients with Alzheimer’s disease. The Geriatric Institute of Education and Research, Kaplan Medical Centre, Rehovot, and Hadassah Medical School, Hebrew University of Jerusalem. Internal report for Lipogen Ltd., previously unpublished research results and personal, 1995, 2008

ⁱⁱⁱGindin J, Kedar. D, Naor, S, Novikov, M, Walter-Ginzburg. A. and Levi, S: The effect of herbal phosphatidylserine on memory and mood in the community elderly. Gerontologist. 33 (Special Issue 1), 1993-

^{iv}Kidd, PM: Alzheimer’s disease, amnesic mild cognitive impairment, and age-associated memory impairment: Current understanding and progress toward integrative prevention. Alt Med Rev, Vol 13: p85-115, 2008.

^vHellhammer, J, Fries, E, Buss, C, Engert, V, Tuch, A, Rutenberg, D and Hellhammer, D: Effects of Soy Lecithin Phosphatidic Acid and Phosphatidylserine Complex (PAS) on the endocrine and psychological responses to mental Stress. Stress, Vol. 7, p 119-126, June, 2004.

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