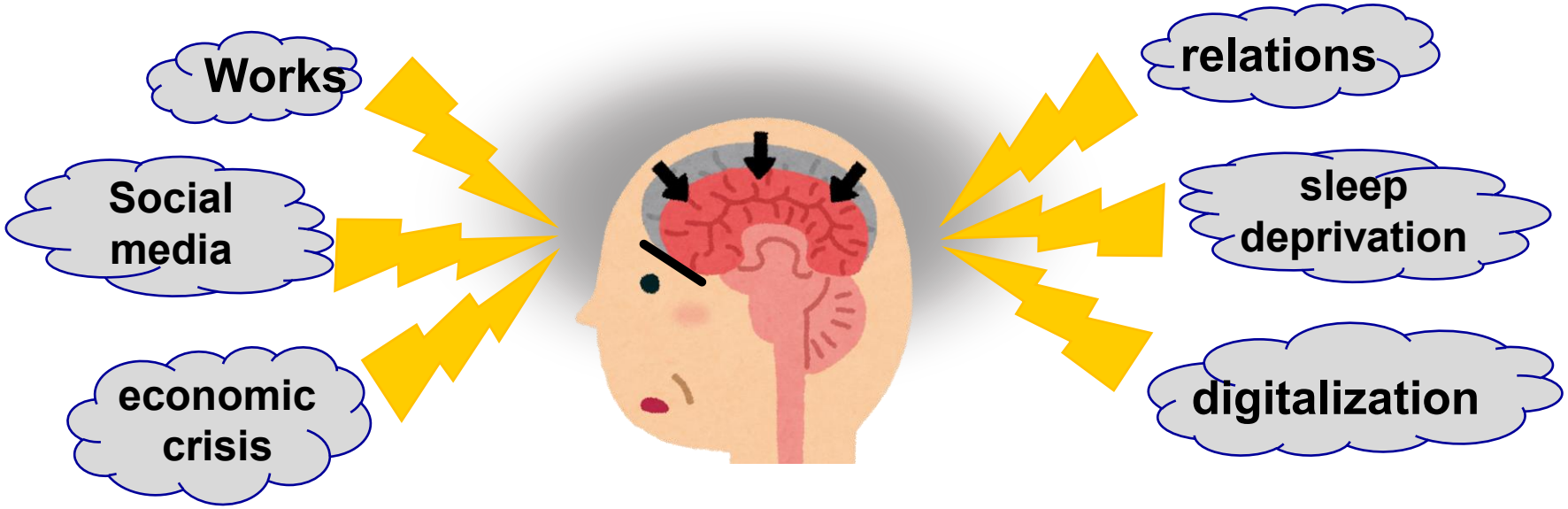
HSOP

Hokkaido Scallop Oil Plasmalogen

Naturally derived plasmalogen to support cognitive function, mood, and concentration

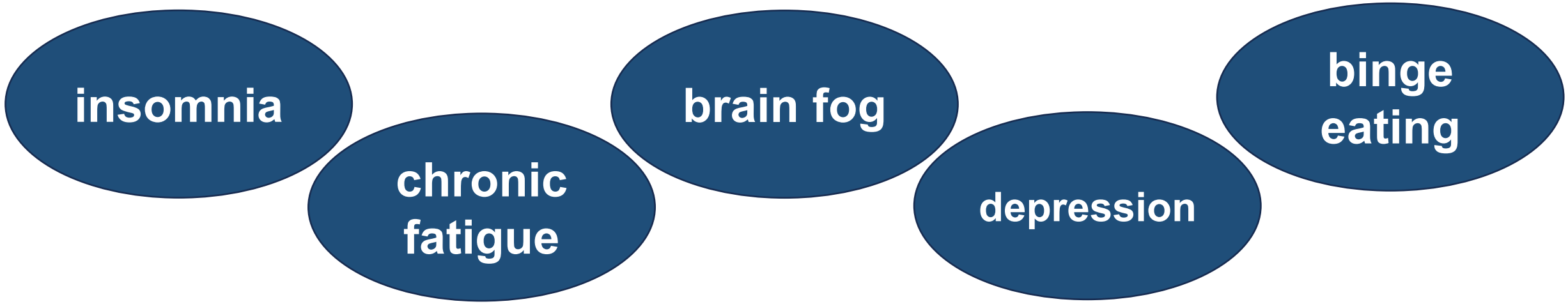
Brain inflammation



Information overload causes brain fatigue

Brain fatigue causes brain inflammation

Symptoms cause by brain inflammation



“feel heavy and unmotivated….”
“feel tired and unable to concentrate….”
“eating too much and gained weight….”

!CAUTION!

Increased risks of Alzheimer’s disease, cataracts, bipolar disorder, schizophrenia

Various complications caused by insomnia, obesity, and lack of exercise…accelerated aging

Alzheimer's Disease, Parkinson's Disease, and Multiple Sclerosis

Dementia is the leading cause of institutionalization among the elderly.

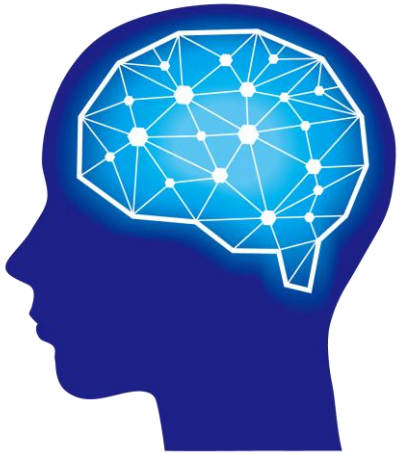
All these diseases are marked by cognitive dysfunction and other functional impairments.

Approved medications are highly ineffective and have costly untoward side effects.

Thus, alternative approaches and treatments are needed to help those affected to have a better quality of life.

What is HSOP?

Hokkaido scallop Oil Plasmalogen



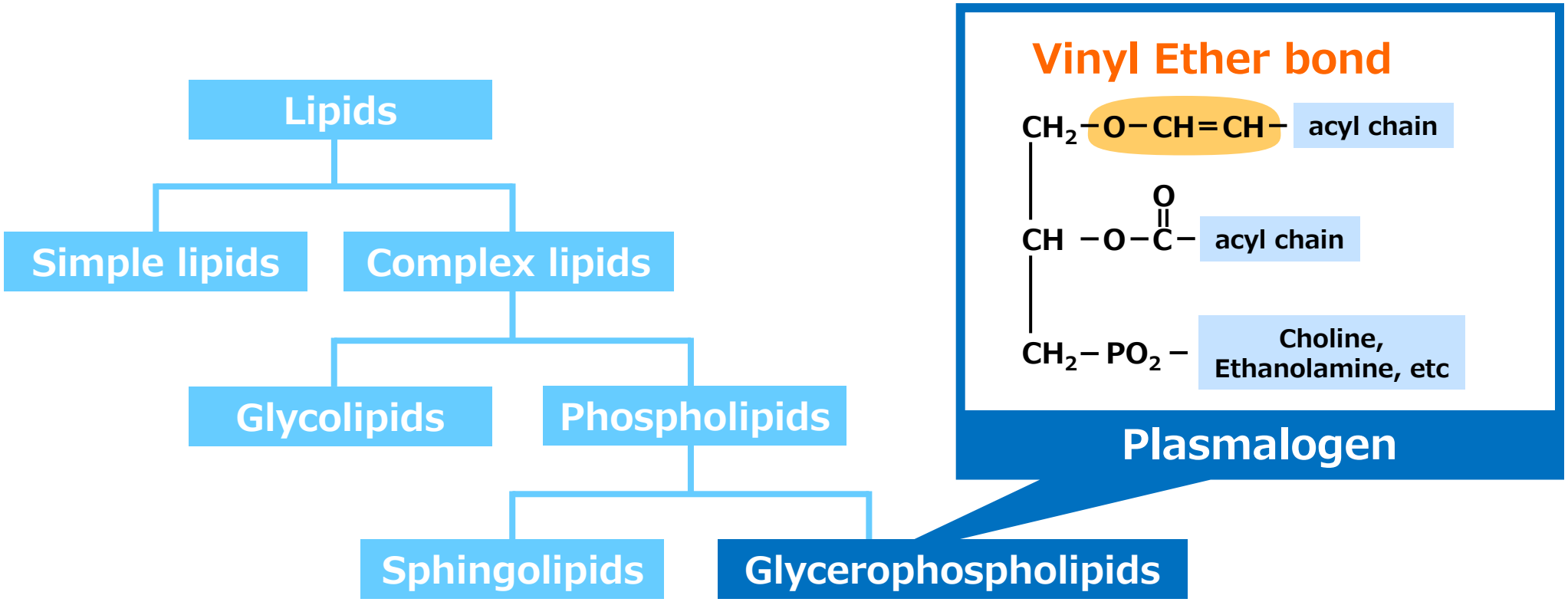
Scallop-derived oil extract which is sourced from the pristine region of Japan

Numerous scientific evidence prove its effectiveness in improving cognitive functions

Rich in high-quality and well-balanced DHA/EPA-bound form of plasmalogens from scallops

Derived from shellfish string parts, which are often just discarded, and is environmentally friendly

Plasmalogens play a pivotal role in our body

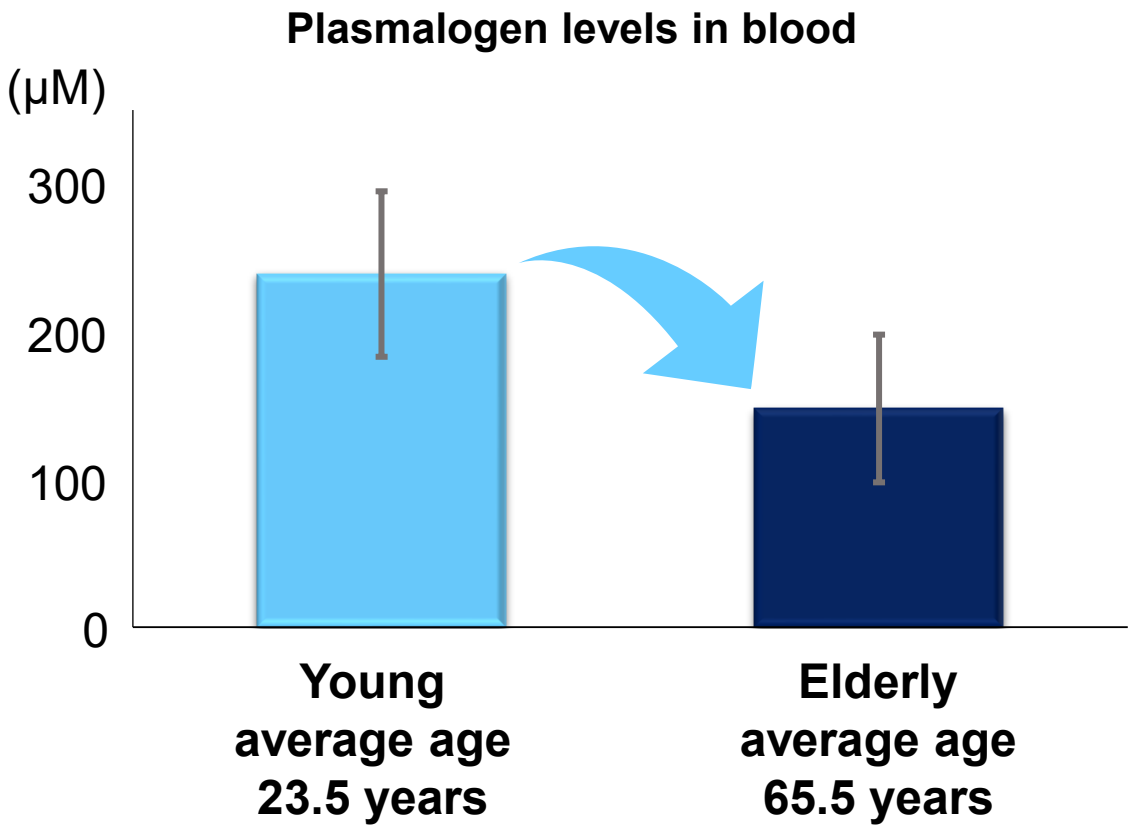


Plasmalogens are important lipids that make up about 20% of the phospholipids that make up our bodies.

Plasmalogens work as a strong antioxidant in the tissue with its characteristic vinyl ether bond, preventing the other membrane lipids from oxidation.

Plasmalogens decrease with age

Graphical display of data from Maeba R et al. J Atheroscler Thromb. 2007 Feb;14(1):12-8.



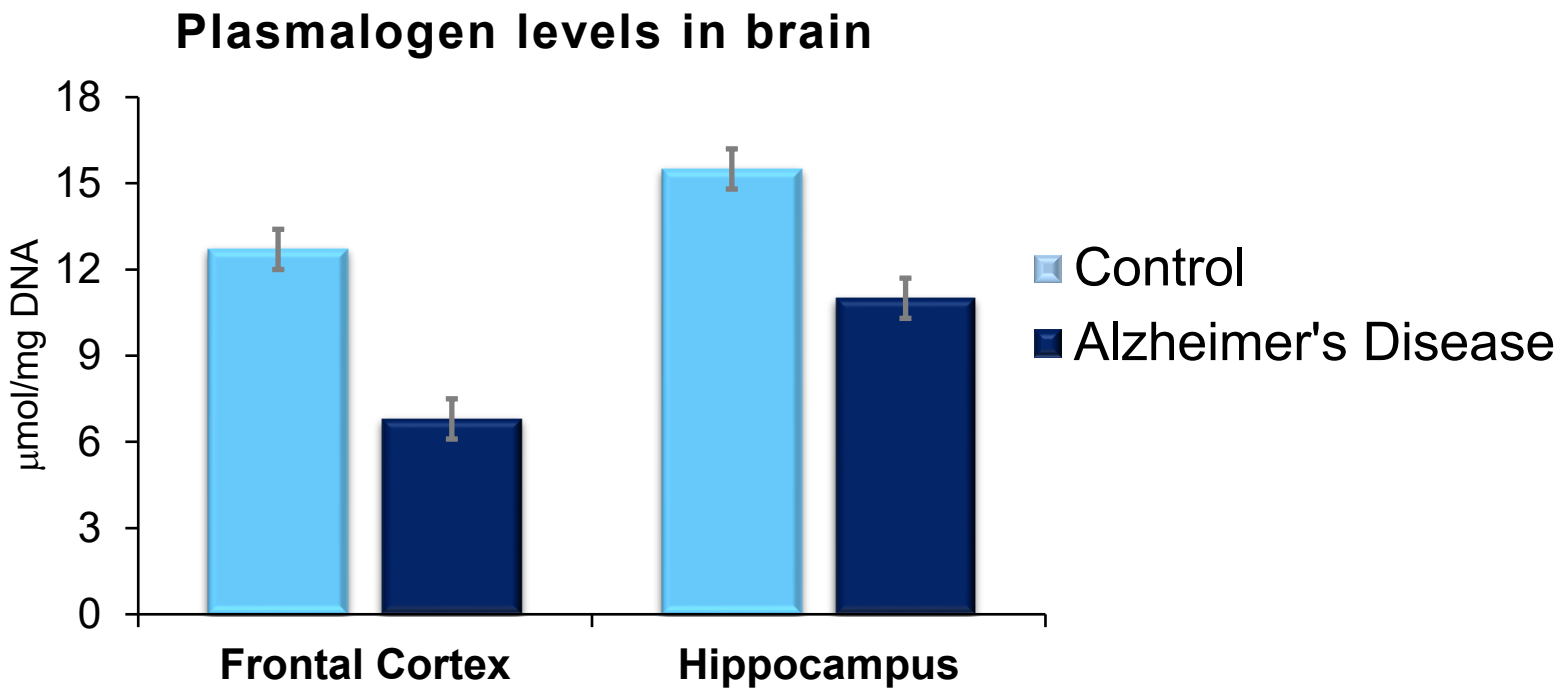
	No. M/F	Age, years	ChoPls + EtnPls, μM
Healthy young subjects	119 91/28	23.5 ± 3.6	239 ± 56
Elderly subjects	140 104/36	65.5 ± 12.0	148 ± 50

Values are expressed as the mean ± SD. N indicates the number of subjects.

Plasmalogens decline with age.
We lose 40% of them in the 60s.

Plasmalogen levels in Alzheimer's disease

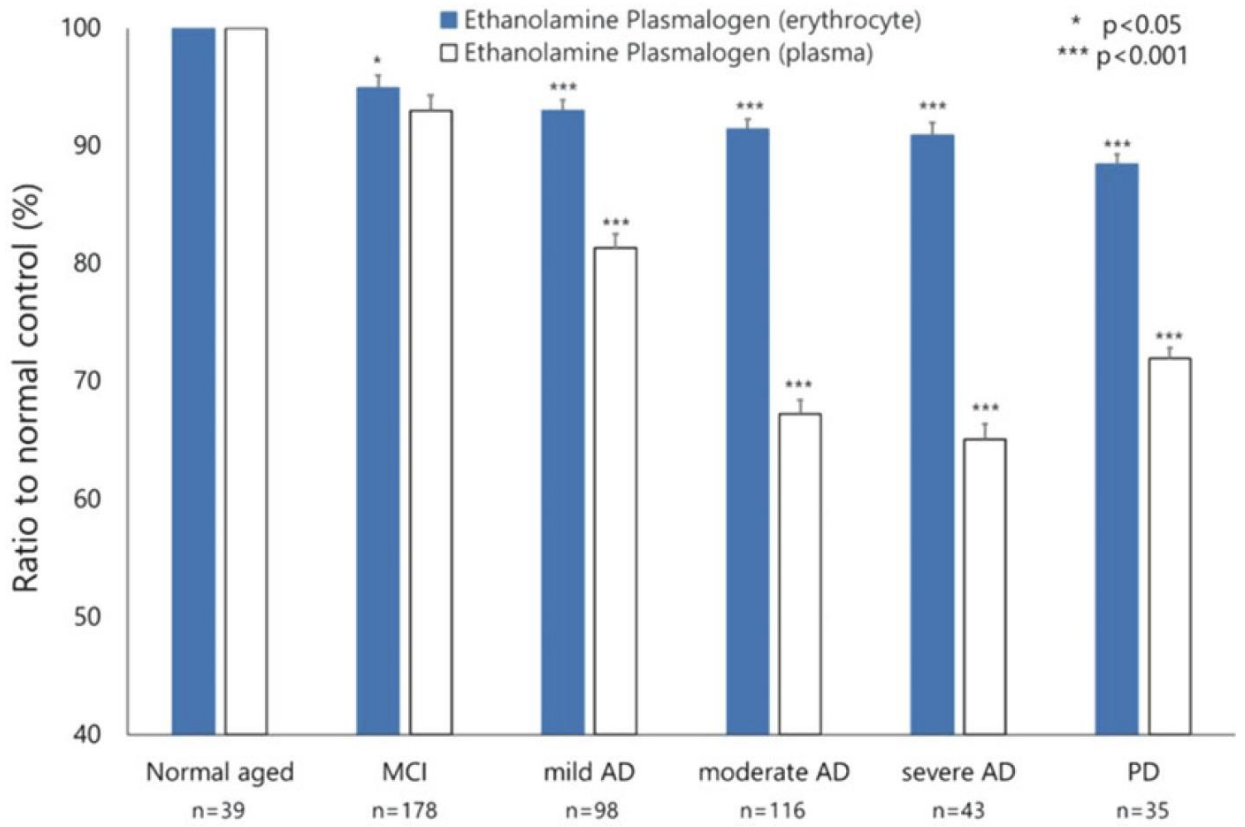
Graphical display of data from Guan Z et al. J Neuropathol Exp Neurol. 1999 Jul;58(7):740-7.



Plasmalogens levels are significantly decreased in brain tissue from patients with Alzheimer's disease.

Plasmalogen levels in MCI, Alzheimer's, and Parkinson's

Fujino et al. Adv Exp Med Biol. 2020;1299:195-212.



When compared to age-matched healthy controls, significant decreases were in near linear severity from MCI to mild, moderate, and severe Alzheimer's to Parkinson's.

How to utilize the plasmalogens effectively?

- Plasmalogen levels decline with age and cognitive impairment.
- Supplements are taken to replenish what is lacking or gradually declining in the body.
- By incorporating plasmalogens into daily intake, it may be possible to help maintain their levels and improve these symptoms.
- HSOP provide a safe and natural option to address this issue.
- To support this, multiple clinical studies have demonstrated the potential benefits of scallop derived plasmalogens.

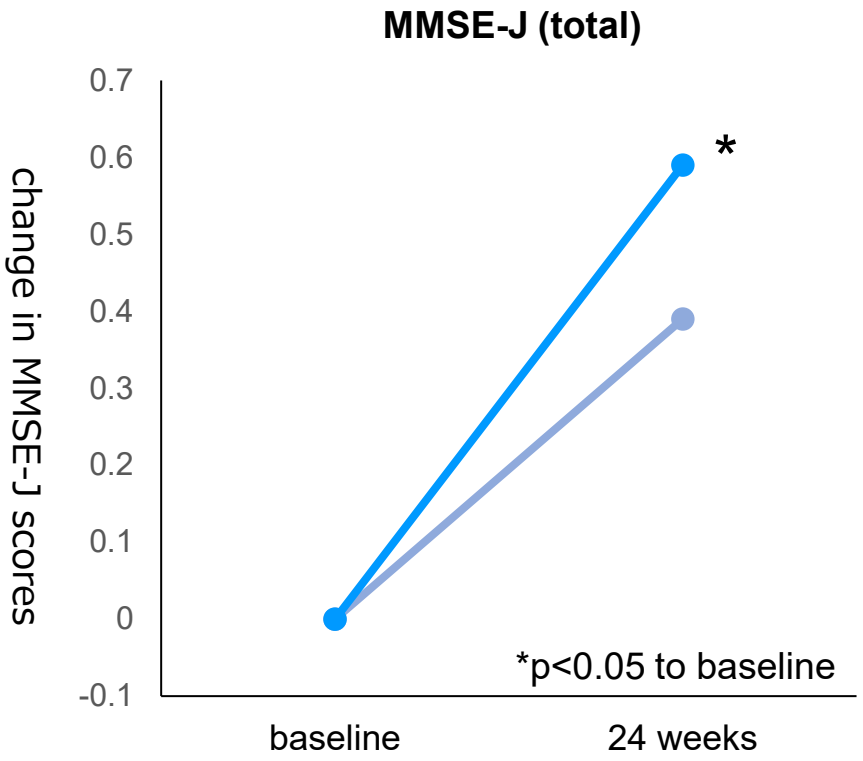
Plasmalogen Efficacy: Cognitive function

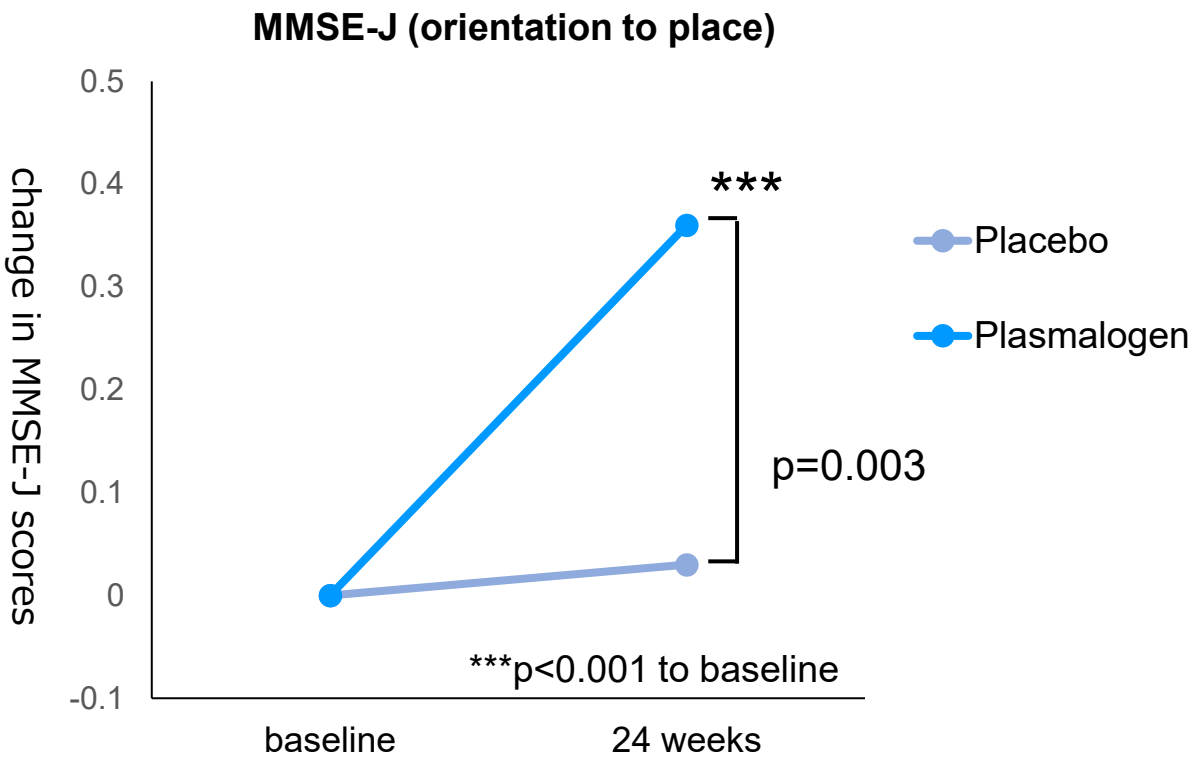
Graphical display of data from Fujino et al. J Alzheimers Dis Parkinsonism 2018, 8:1

【Study design】

- double-blind, randomized controlled trial.
- 178 elderly patients with MCI (Mild Cognitive Impairment)
- received 1 mg of Scallop oil plasmalogen everyday for 24 weeks.

MMSE: Mini-Mental State Examination





Plasmalogen Efficacy: Cognitive function

Integrative Medicine. Vol.21, No.6, January 2023, 16-20
John E. Lewis and Lonnie A. Fravel

【Study design】

- Double-armed randomized pilot study
- Nine older adults with concerns either about memory and cognition or some form of actual memory loss or cognitive dysfunction
- Received 1-2 capsules of HSOP everyday for 90 days.

Changes in MMSE Scores Before and After HSOP Supplementation

Score Change	Participants
6	1
5	1
4	2
1	1
0	1
−1	1
Total	7

Changes in CES-D Scores Before and After HSOP Supplementation

Score Change	Participants
−6	1
1	1
2	1
12	2
31	1
Total	6

MMSE: Mini-Mental State Examination
CES-D: Center for Epidemiologic Studies Depression Scale

Patented health claim for improving vitality and tiredness

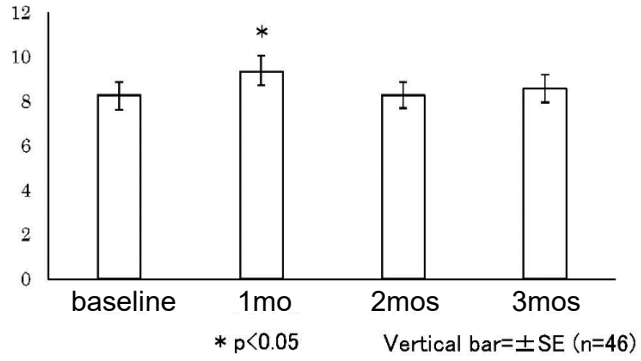
【**Patent No.**】7105456 (JP)
【**Title of invention**】Foods for improving physical condition that increase vitality, suppress depression, and relieve fatigue

【Study design】
- 46 healthy subjects (average age, 43.9 years; 20 males and 26 females)
- They received one soft gel capsule of HSOP everyday for 3 months.

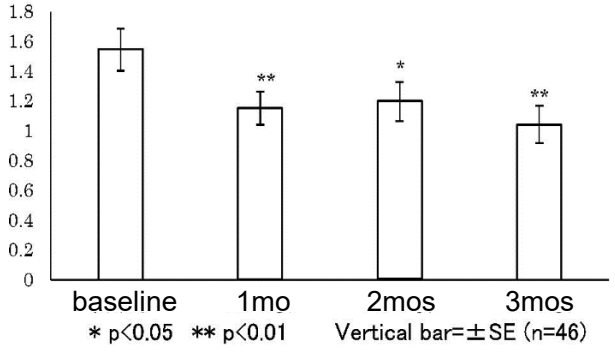
【Evaluation of psychological status】
A total of 4 surveys for mental conditions were conducted at baseline and 1, 2, 3 months.

【Results】

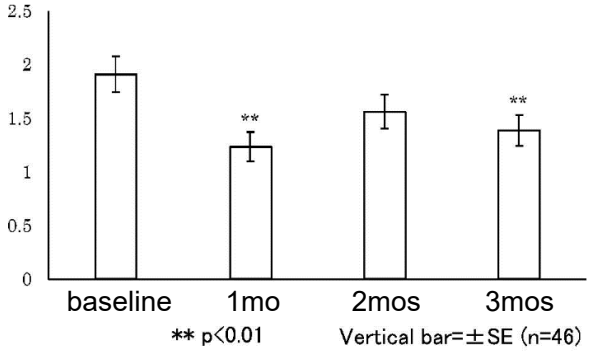
Vigor-activity



Memory relapse



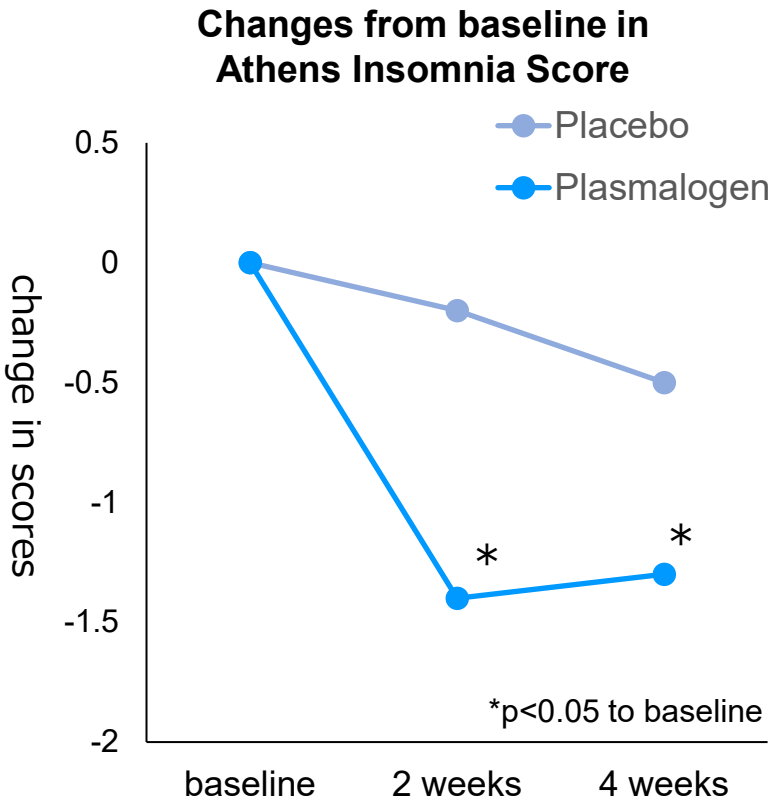
Blurred vision and eye fatigue



- Scores in “Vigor-activity”, “Memory loss” and “Blurred vision and eye fatigue” were significantly increased by Daiwa Scallop Oil Plasmalogen.
- Significant differences were also detected in the scores of “Stuffy head or feel dull”, “Difficulties in maintaining concentration and persistence”, “Non-continuous sleep”, and “Frequent constipation”.

Plasmalogen Efficacy: Insomnia

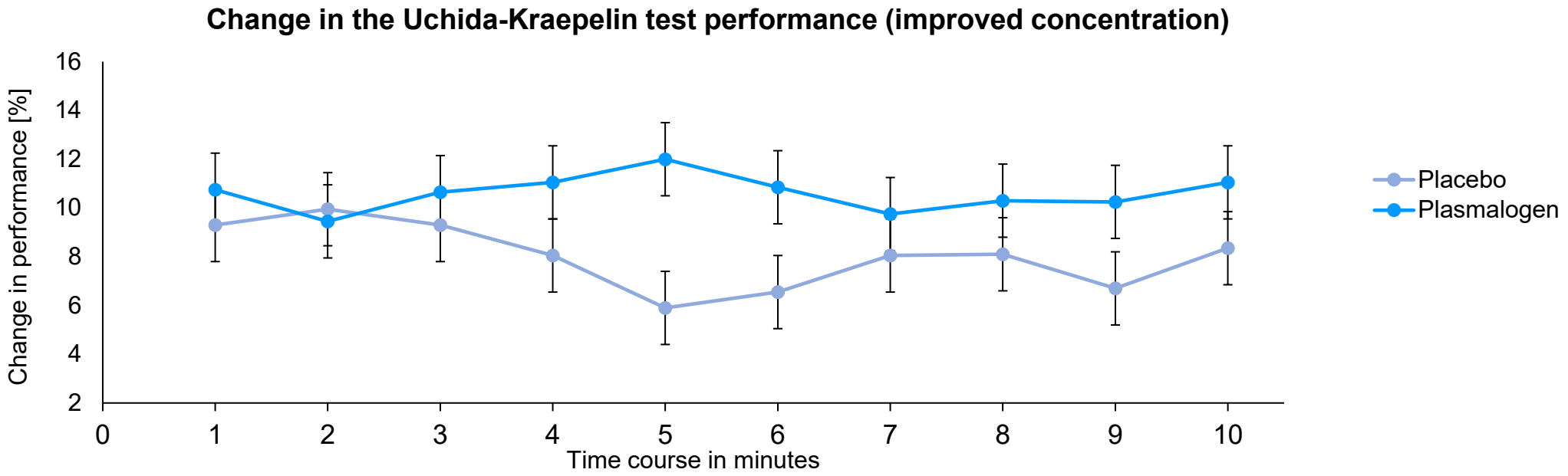
Graphical display of data from Fujino et al. Front Cell Dev Biol. 2022 Jun 2;10:894734.



Sleep factors	Athens insomnia scale			
Sleep induction	0: No problem	1: Slightly delayed	2: Markedly delayed	3: Very delayed or did not sleep at all
Awakenings during the night	0: No problem	1: Minor problem	2: Considerable problem	3: Serious problem or did not sleep at all
Final awakening	0: Not earlier	1: A little earlier	2: Markedly earlier	3: Much earlier or did not sleep at all
Total sleep duration	0: Sufficient	1: Slightly insufficient	2: Markedly insufficient	3: Very insufficient or did not sleep at all
Sleep quality	0: Satisfactory	1: Slightly unsatisfactory	2: Markedly unsatisfactory	3: Very unsatisfactory or did not sleep at all
Well-being during the day	0: Normal	1: Slightly decreased	2: Markedly decreased	3: Very decreased
Functioning capacity during the day	0: Normal	1: Slightly decreased	2: Markedly decreased	3: Very decreased
Sleepiness during the day	0: None	1: Mild	2: Considerable	3: Intense

Plasmalogen Efficacy: Mental Concentration

Fujino et al. Front Cell Dev Biol. 2022 Jun 2;10:894734.



Overview of 7 Clinical Studies on Scallop-Derived Plasmalogen

Study	Author & Journal	Subjects & Design	Dosage	Duration	Primary Outcomes	Key Results
1	**Fujino et al.** EBioMedicine. 2017 Mar;17:199–205.	**Mild AD + MCI (n=276)** Multicenter RCT, Double-blind	**1.0 mg/day**	24 weeks (+4w obs)	MMSE-J, WMS-R, plasma PlsPE	WMS-R improved in mild AD females (p = 0.017) and ≤77 yrs (p = 0.029); plasma PlsPE decline suppressed (p = 0.016).
2	**Fujino et al.** JAD Parkinsonism. 8:419.	**MCI patients (n=178)** Multicenter RCT, Double-blind*	**1.0 mg/day**	24 weeks	MMSE-J (domains)	Significant between-group difference in orientation to place (p = 0.003); especially notable in patients ≤77 years.
3	**Fujino et al.** JAD Parkinsonism. 9:474.	**Moderate-Severe AD (n=157)** Open-label	**0.5 or 1.0 mg/day**	12 weeks	MMSE, Blood Pls	MMSE +1.82 points ($p < 10^{-10}$); no dose difference; erythrocyte PlsPE change correlated with MMSE change (r = 0.20).
4	**Igari et al.** TOWNSEND LETTER – FEBRUARY/MARCH 2022;60–63.	**General adults (cognitive/mood concerns, n=46)** Single-arm	**0.5 mg/day**	3 months	POMS2, Questionnaire	Vigor-activity improved (p = 0.040); memory relapse, concentration persistence, continuous sleep, eye fatigue, constipation frequency significantly improved.
5	**Fujino et al.** Front Cell Dev Biol. 2022 Jun 2;10:894734.	**Healthy college athletes (n=40)** RCT, Double-blind	**2.0 mg/day**	4 weeks	POMS2, Uchida-Kraepelin	Anger-hostility (p = 0.003) and fatigue-inertia (p = 0.005) improved; vigor-activity (p = 0.04) declined; concentration significantly enhanced.
6	**Lewis & Fravel** Integr Med (Encinitas). 2022 Dec;21(6):16–23.	**Older adults (cognitive concerns, n=9)** Pilot RCT	**0.5 or 1.0 mg/day**	90 days	MMSE, CESD	MMSE improved 19.1→21.9 (p = 0.04); no difference between dose groups; CESD improved (trend).
7	**Pescatore** Altern Ther Health Med. 2024 Oct;30(10):18–20.	**Subjective Cognitive Decline (n=30)** Pilot Study	**0.5 mg/day**	90 days	AMTS, SMMSE	Significant improvement in AMTS (p = 0.001) and SMMSE (p < 0.001); comparison product showed no improvement.

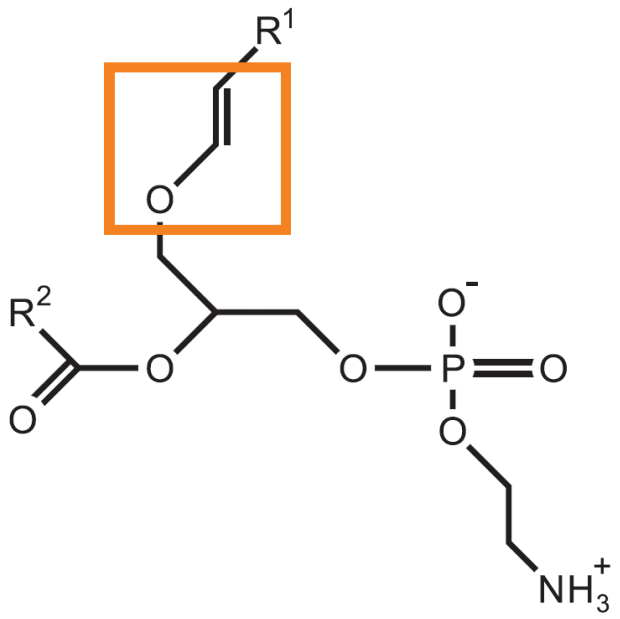
※ Study 2: Subgroup analysis of MCI patients from the same trial as Study 1. | Abbreviations: Pls (Plasmalogen), PE (Phosphatidylethanolamine), AD (Alzheimer's Disease), MCI (Mild Cognitive Impairment), RCT (Randomized Controlled Trial), MMSE (Mini-Mental State Exam), WMS-R (Wechsler Memory Scale – Revised), POMS2 (Profile of Mood States 2nd Edition), CESD (Center for Epidemiologic Studies Depression Scale), AMTS (Abbreviated Mental Test Score),

Efficacy Matrix by Dosage (7 Studies × 9 Effects)

Study	Memory/ Cognitive	Depression	Mood (Anger/Fatigue)	Concentration	Sleep	Vitality	Blood PIs Levels	Eye Fatigue	Constipation
① **Fujino et al.** EBioMedicine. 2017 Mar:17:199–205.	**1.0 mg/day** Mild AD females / ≤77y $p = 0.017 / 0.029$	—	—	—	—	—	**1.0 mg/day** Plasma PlsPE decline suppressed $p = 0.016$	—	—
② **Fujino et al.** JAD Parkinsonism. 8:419.	**1.0 mg/day** Orientation (Place) $p = 0.003$	—	—	—	—	—	—	—	—
③ **Fujino et al.** JAD Parkinsonism. 9:474.	**0.5–1.0 mg/day** MMSE $p < 10^{-10}$ No dose diff.	—	—	—	—	—	**0.5–1.0 mg/day** Erythrocyte. PlsPE $p = 0.001$ Plasma PlsPE $p < 10^{-8}$ No dose diff	—	—
④ **Igari et al.** TOWNSEND LETTER – FEBRUARY/MARCH 2022;60–63.	**0.5 mg/day** Memory $p = 0.002$	—	—	**0.5 mg/day** Concentration $p = 0.044$	**0.5 mg/day** Sleep Quality $p = 0.028$	**0.5 mg/day** Vigor $p = 0.040$	—	**0.5 mg/day** Eye Fatigue $p = 0.007$	**0.5 mg/day** Constipation $p = 0.017$
⑤ **Fujino et al.** Front Cell Dev Biol. 2022 Jun 2;10:894734.	—	—	**2.0 mg/day** Anger / Fatigue $p = 0.003 / 0.005$	**2.0 mg/day** Uchida-Kraepelin $p < 0.01$	**2.0 mg/day** Insomnia scale $p = 0.03$	**2.0 mg/day** Vigor $p = 0.04$ (Negative)	—	—	—
⑥ **Lewis & Fravel** Integr Med (Encinitas). 2022 Dec;21(6):16-23.	**0.5–1.0 mg/day** MMSE $p = 0.04$ No dose diff.	**0.5–1.0 mg/day** CESD Trend No dose diff.	—	—	—	—	—	—	—
⑦ **Pescatore** Altern Ther Health Med. 2024 Oct;30(10):18-20.	**0.5 mg/day** AMTS / SMMSE $p = 0.001 / p < 0.001$	—	—	—	—	—	—	—	—

Spec and Safety information

HSOP
Hokkaido Scallop Oil Plasmalogen



- Soft gel formulation in Japan as capsules.
- 0.5 mg of scallop derived plasmalogens per capsule.
- Suggested dose: 1–4 capsules (0.5–2.0 mg) per day.
- Special coating to prevent Plasmalogens from heat, oxidation and gastric juice. It enables delivery Plasmalogens to the intestines.

Safety tests

- Mutagenicity (Ames test): Negative
- Acute toxicity (rat): LD_{50} > 5,000 mg/kg
- Repeated-dose toxicity (rat): NOAEL > 1,000 mg/kg/day

Thank you so much for your attention!

1) Why did you choose Hokkaido Scallops specifically for extracting plasmalogens? What makes this source superior to others?

2) People often confuse plasmalogens with standard Omega-3 fish oils. What is the fundamental difference in terms of brain benefits?

3) Could you simplify how scallop-derived plasmalogens actually support our brain and cognitive health?

4) Do you believe that plasmalogens are the future of combating brain fatigue and cognitive aging?”

4) Are plasmalogens absorbed into the body when taken orally?

Recommended Dosage by Target Population

General Adults (Health Maintenance)

0.5 mg/day

Broadest Benefits: Confirmed effects in 7 categories including cognition, sleep, and vitality.

Equal Efficacy: No significant difference from 1.0 mg/day found in Studies 3 & 6.

Best Value: Maximum benefit at minimum cost, ideal for long-term prevention.

Mild-to-Severe AD & MCI Patients

1.0 mg/day

Clinical Standard: Dosage used in highest-quality multicenter RCTs (Study 1 & 2).

Domain Specific: Significant improvement in orientation-to-place (P = 0.003). This is the only health claim that has been officially accepted in Japan.

Biomarker Support: Confirmed maintenance of blood plasmalogen levels (P = 0.016).

Mood Control & Sports Performance

2.0 mg/day

Unique Mood Benefits: Only dose showing significant anger-hostility (P = 0.003) & fatigue-inertia improvement (P = 0.005).

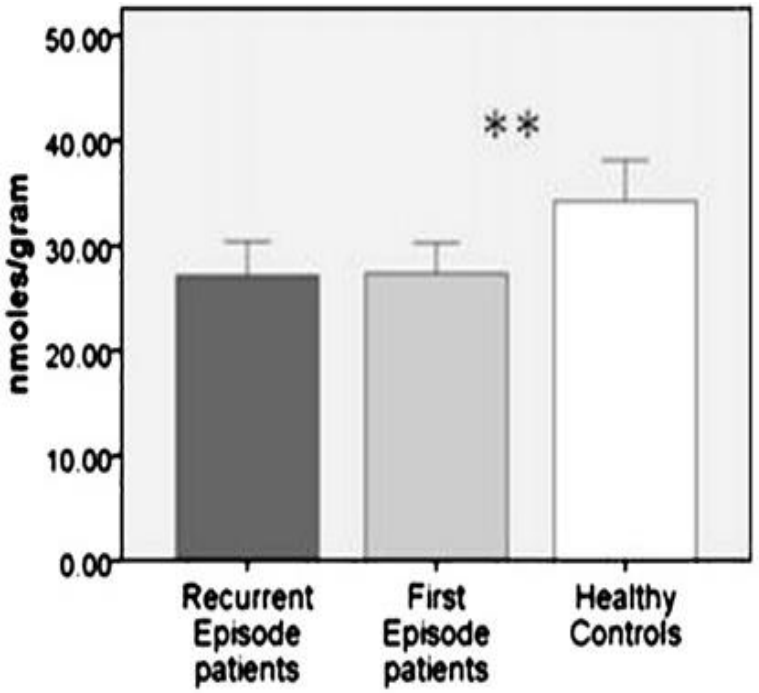
Performance: Significant concentration enhancement (Uchida-Kraepelin Test).

Note: Data is specifically from healthy young athletes; higher cost may impact adherence.

Plasmalogen levels in Schizophrenia

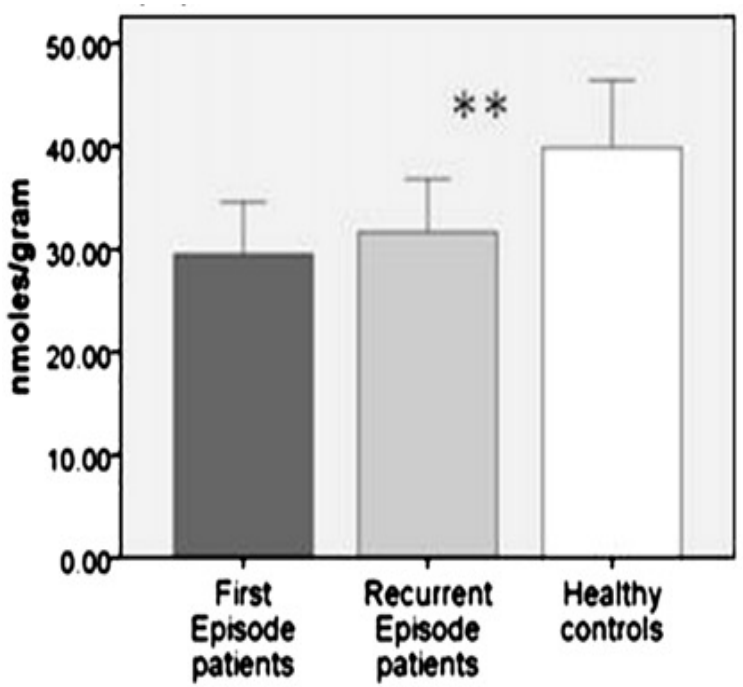
Kaddurah-Daouk R et al. Psychiatry Res. 2012 Aug 15;198(3):347-52.

Total Phosphatidylcholine Levels



atients compared to controls

Total Phosphatidylethanolamine Levels

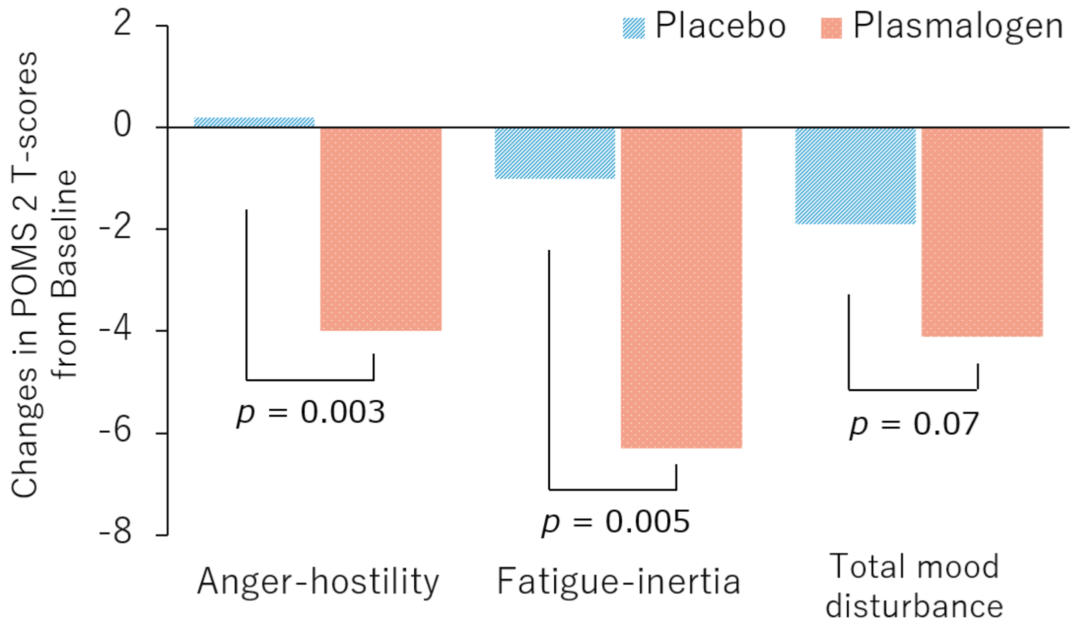


Plasmalogens levels were significantly lower in concentration in patients with Schizophrenia.

Plasmalogen Efficacy: Cognitive function

Fujino, et al. Frontiers in Cell and Developmental Biology. 2022;10:894734.

Healthy male university athletes were enrolled in this study and assigned to two groups (n = 20) and administered either scallop-derived plasmalogen (2 mg/day) or a placebo for 4 weeks. Mental and physical well-being were evaluated using the POMS 2 (Profile of Mood States 2nd Edition) test, a standardized psychological assessment that quantifies psychological and physical health status. The results showed that the Total Mood Disturbance (TMD) score in the plasmalogen group exhibited a tendency toward reduction compared with the placebo group (*p* = 0.07). In addition, the subscale scores for Anger–Hostility and Fatigue–Inertia were significantly lower in the plasmalogen group than in the placebo group (*p* = 0.003 and *p* = 0.005, respectively), confirming the beneficial effect of scallop-derived plasmalogen in improving negative mood states.



Changes in POMS 2 T-scores from Baseline at 4 weeks

List of Plasmalogen Research Papers (Excerpts)

No.	Title	Journal	Year	Peer-reviewed
1	Disease and anatomic specificity of ethanolamine plasmalogen deficiency in Alzheimer's disease brain	Brain Research Vol. 698, Issues1–2, 6 November 1995, 223-226	1995	
2	Decrease and structural modifications of phosphatidylethanolamine plasmalogen in the brain with Alzheimer disease	J Neuropathol Exp Neurol. 1999 Jul;58(7):740-7.	1999	✓
3	Plasmalogen deficiency in early Alzheimer's disease subjects and in animal models: molecular characterization using electrospray ionization mass spectrometry	Journal of Neurochemistry,2001,77,1168-1180	2001	✓
4	Plasmalogens in Human Serum Positively Correlate with High-Density Lipoprotein and Decrease with Aging	J Atheroscler Thromb, Vol.14 No.1	2007	✓
5	Peripheral ethanolamine plasmalogen deficiency: a logical causative factor in Alzheimer's disease and dementia	Journal of Lipid Research Volume 48, 2007	2007	✓
6	Circulating plasmalogen levels and Alzheimer Disease Assessment Scale–Cognitive scores in Alzheimer patients	J Psychiatry Neurosci 2010;35(1)	2010	✓
7	Dietary plasmalogen increases erythrocyte membrane plasmalogen in rats	Lipids in Health and Disease 2012, 11:161	2012	✓
8	Anti-inflammatory/anti-amyloidogenic effects of plasmalogens in lipopolysaccharide-induced neuroinflammation in adult mice	Journal of Neuroinflammation 2012, 9:197	2012	✓
9	Changes in Phospholipid Composition of Erythrocyte Membrane in Alzheimer's Disease	Dement Geriatr Cogn Disord Extra 2012;2:298-303	2012	✓
10	Effects of plasmalogens on systemic lipopolysaccharide-induced glial activation and β-amyloid accumulation in adult mice	Ann. N.Y. Acad. Sci. 1262 (2012) 85-92	2012	✓
11	Plasmalogens Inhibit APP Processing by Directly Affecting γ-Secretase Activity in Alzheimer's Disease	The Scientific World Journal Volume 2012, Article ID 141240, 15 pages	2012	✓
12	Plasmalogens Rescue Neuronal Cell Death through an Activation of AKT and ERK Survival Signaling	PLOS ONE, December 2013, Vol. 8, Issue 12, e83508	2013	✓
13	Alterations in the Levels of Amyloid-b, Phospholipid Hydroperoxide, and Plasmalogen in the Blood of Patients with Alzheimer's Disease: Possible Interactions between Amyloid-b and These Lipids	Journal of Alzheimer's Disease 50 (2016) 527-537	2016	✓
14	Efficacy and Blood Plasmalogen Changes by Oral Administration of Plasmalogen in Patients with Mild Alzheimer's Disease and Mild Cognitive Impairment: A Multicenter, Randomized, Double-blind, Placebo-controlled Trial	EBioMedicine 17 (2017) 199–205	2017	✓
15	Oral Administration of Ethanolamine Glycerophospholipid Containing a High Level of Plasmalogen Improves Memory Impairment in Amyloid β-Infused Rats	Lipids (2017) 52:575-585	2017	✓
16	Oral ingestion of plasmalogens can attenuate the LPS-induced memory loss and microglial activation	Biochem Biophys Res Commun. 2018 Feb 19;496(4):1033-1039.	2018	✓
17	Effects of Plasmalogen on Patients with Mild Cognitive Impairment: A Randomized, Placebo-Controlled Trial in Japan	J Alzheimers Dis Parkinsonism 2018, Vol 8(1): 419	2018	✓
18	Effects of Plasmalogen on Patients with Moderate-to-Severe Alzheimer's Disease and Blood Plasmalogen Changes: A Multi-Center, Open-Label Study	J Alzheimers Dis Parkinsonism 2019, Vol 9(4): 474	2019	✓
19	The Evaluation Test of Brain Function by Oral Consumption of the Food Which Contain Plasmalogen –Randomized, Placebo-controlled, Double-blind Parallel-group study-	Jpn Pharmacol Ther Vol. 47 No. 5 2019	2019	
20	Plasmalogens and Alzheimer's disease: a review	Lipids Health Dis. 2019; 18: 100.	2019	✓
21	Orally Administered Plasmalogens Alleviate Negative Mood States and Enhance Mental Concentration: A Randomized, Double-Blind, Placebo-Controlled Trial	Front Cell Dev Biol. 2022; 10: 894734.	2022	✓