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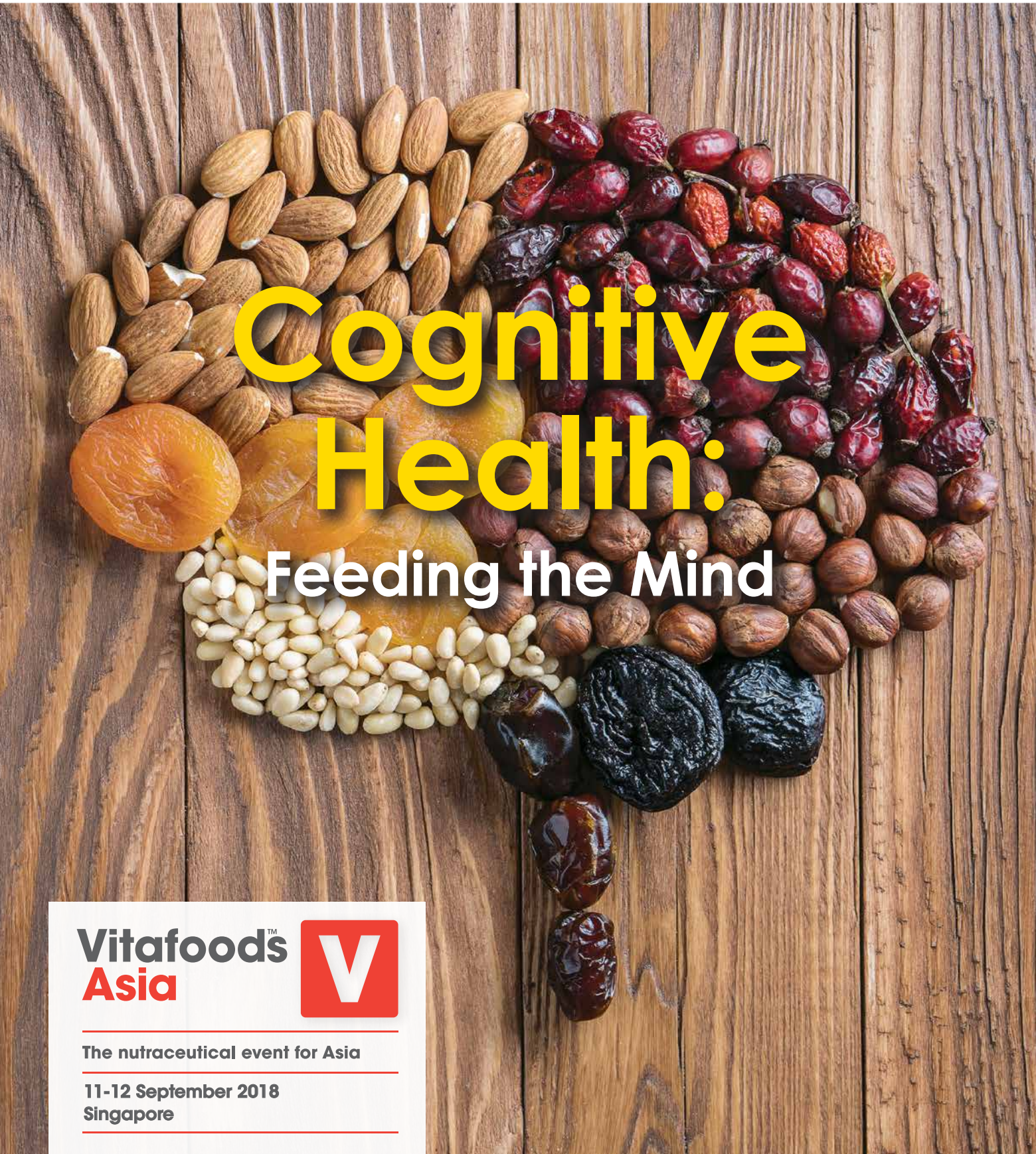

Cognitive Health:

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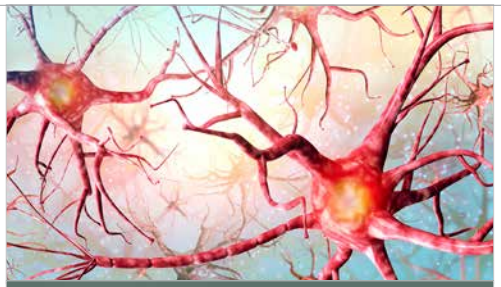

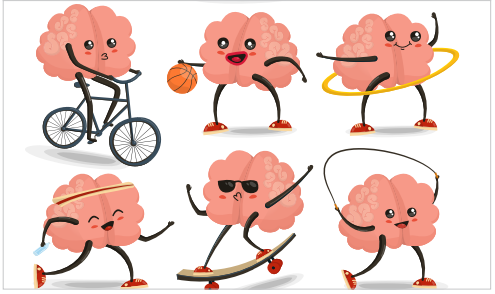

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The Power of the Mind

I've always said, if I could have any superpower I'd want telekinesis—the power of the mind has long fascinated me, and could you imagine how easy life would be if you didn't have to lift a finger? It's the epitome of laziness and something I'm eagerly awaiting science to afford me! While we're not quite there yet, there's plenty of data emerging every day to support the amazing benefits various natural ingredients have on cognitive health. From increased focus to evading burnout, there are ingredients to support all manner of brain health concerns—though sadly nothing in the moving-things-with-your-mind arena… yet!

With exciting new developments and research backing all sorts of benefits, manufacturers are understandably keen to include a health claim with their product. As consumers these days are increasingly discerning about science-backed ingredients, Karin Verzijden covers meeting the legal standards for health claims in the European Union on page 5 and explores the flexibility of the system, as well as the options outside its scope.

Moving on from the regulatory necessities, we return to the science with an article on natural ingredients for insomnia from Dr Natalia Wszelaki and Irene Wohlfahrt on page 9. Insomnia is one of the most prevalent health concerns worldwide, affecting up to 45 percent of the world's population. Luckily, there's a wide range of natural remedies available for many of the causes of sleepless nights.

Consumers are demanding more and more from their natural health products, and cognitive health ingredients are among the most wanted functional additions. Occurring naturally in cells, phosphatidylserine is a key building block in cell membranes, playing an important role in several cellular processes, especially in the brain. Dr Itay Shafat examines the cognitive health benefits this ingredient offers on page 14 and looks at how it can be successfully incorporated in natural health products.

Each and every human brain has 100 billion neurones and 100 trillion synapses needing serious nutritional support—from day one to old age, many natural ingredients can help ensure a long mentally-agile lifetime.

Jade Sterling
Associate Editor, Vitafoods Insights
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Cognition and Nutrition: The Legal Framework

By Karin Verzijden

Consumers across all demographics are increasingly concerned about cognitive health and performance. R&D advancing the understanding of nutrition and cognitive health and performance is therefore a hot topic. This article covers meeting legal standards for products bearing cognitive claims in the European Union. In addition to the system of currently authorised claims, it will explore the flexibility of the system, as well as the options outside its scope.

FIC Regulation

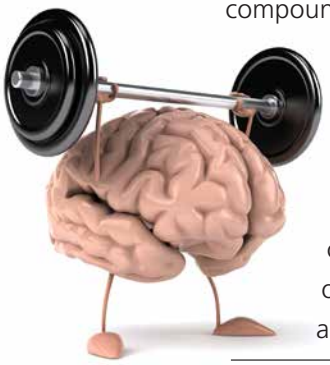
The general framework for health claims is contained both in the food information to the consumer (FIC) Regulation (1169/2011) and in the Claims Regulation (1924/2006). The FIC Regulation embodies the principle of fair information practices. According to this principle, food information should not be misleading as to the characteristics of the food, for example by attributing effects to it that it does not possess. Furthermore, the FIC Regulation prohibits any medical claims to be made in connection with food products. A medical claim is to be understood as any claim targeting the prevention or treatment of a particular disease. It is, for instance, not permitted to state a certain food supplement alleviates the symptoms of rheumatoid arthritis.

Claims Regulation

The Claims Regulation lays down the very concept of a health claim, being a voluntary message in any form that states or suggests that a food has particular characteristics. Basically, a health claims conveys the message: 'what does the product do?' Health claims can only be made with regard to a particular nutrient that has been shown to have a beneficial nutritional or physiological effect—such nutrient should be present in the end product in a form that is bioavailable and to such extent that it produces the claimed effect. The scope of the Claims Regulation includes all commercial communications regarding food products to be delivered to the final consumer. Based on the Innova/Vital decision of the ECJ (case C-19/15), it was clarified that such final consumer can also be a health care professional.

Legal framework for cognitive claims

Currently, iodine, iron and zinc have authorised claims for cognition. For all these compounds, the claim 'contributes to the normal cognitive function' can be made. In addition, for iodine, the claim 'contributes to the normal functioning of the nervous system' is available and for iron, a claim specifically targeting children can be made. The conditions of use for these claims are calculated on the reference intake (RI) applicable to each mineral. As such, a distinction is being made between solids (15 percent RI) and fluids (7.5 percent RI). For instance, to allow a cognition claim linked to iron, the end product should at least contain 2.1 mg iron per 100 g or 1.05 mg per 100 ml. Any claim should refer to a food ready for consumption in accordance with the manufacturer's instructions.



IN THIS ISSUE Viewpoint **p.3** Natural Ingredients for Insomnia **p.9** Table of Contents **p.2**

Flexibility in wording

In practice, we see many food business operators try to rework the authorised claims, as they are considered to be somewhat rigid in daily use. In the Netherlands, this practice has been facilitated by the Council on Public Advertising of Health Products (Keuringsraad KOAG-KAG), which has published a list of alternative claims, the use of which is authorised all the same. For instance, for a claim on zinc, the wording 'contributes to a regular problem-solving ability' is permitted. Regarding a claim on iodine, you use think of 'plays an important role in mental activity.' Furthermore, it is also permitted to state that a food product containing the required minimum of iron 'contributes to regular intelligence'. Obviously, such imaginative variations are more attractive than the standard authorised claims.

Examples found in practice

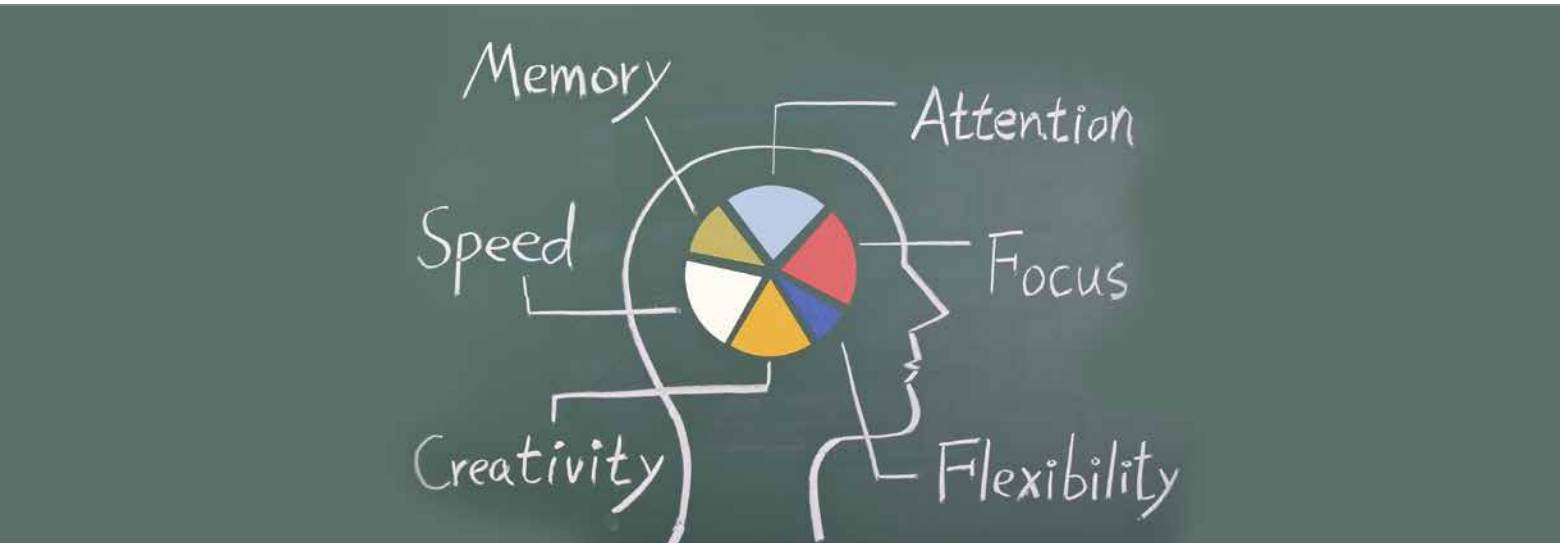
An internet search for products targeting cognition revealed that of them are not linked to the EU authorised claims at all. For instance, one company[1] is marketing a food supplement containing Ginkgo, claiming that it 'helps to enhance cognitive function and memory in an ageing population.' Also found was a food supplement containing various vitamins, minerals and green tea extract[2], which allegedly 'improves cognitive health' and 'increases concentration and attention'. Furthermore, a green oat product[3] was found, regarding which five clinical studies confirm that it benefits cognitive functioning. How can this be explained? The first two examples contain claims that in the EU would no doubt qualify as medical claims and as such are prohibited.

Non-EU products and options beyond the claims framework

Products that do not comply with EU standards may originate from other countries or territories, that are subject to a different regulatory regime than applicable in the EU. Without endorsing any claims made, it was found the Ginkgo and supplement products originated from Canada and the United States respectively. The same is not true for the green oat product, which also seems to be targeting the European Union. However, his product is not advertised on a commercial website targeting end consumers, but in a scientific portal—the website even contains a disclaimer to that extent. In a non-commercial, purely scientific environment, the Claims Regulation is not applicable. This allows FBOs—under certain circumstances—to communicate on their R&D and cognition even outside the authorised EU framework.

From cognition to attention

Recently, the European Food Safety Authority (EFSA) gave a positive opinion[4] with respect to a health claim related to black tea, notably 'owing to its caffeine content, black tea improves attention'. In the application, attention was defined as 'a state of focused awareness on a subset of the available perceptual information', a definition retained by the American Psychological Association. In weighing the evidence, EFSA's NDA Panel took into account that the consumption of 2 to 3 servings of black tea (containing a cumulative amount of



at least 1,040 mg of tea solids, 90 mg of caffeine and 36 mg of l-theanine) within a time period of up to 90 min consistently improved attention in three human intervention studies. In fact, the applicant had proposed the more general claim 'black tea improves attention'. The NDA Panel, however, observed that no evidence was provided that l-theanine in tea has an effect on attention beyond the effect of caffeine.

The positive EFSA opinion regarding the effect of black tea on improvement of attention has yet to materialise in a (proprietary) health claim. Since the Dextro case (ECJ case C-296/16), we know this is by no means a given. While EFSA in that case did provide a positive opinion with respect to a number of claims related to glucose (including 'glucose supports normal physical activity' and 'glucose contributes to normal muscle function'), the European Commission refused to endorse such opinion for reasons of public health.[5] Dextro had challenged the European Commission on this refusal but did not prevail. The same procedure is not expected for the black tea claim, as caffeine is less controversial than glucose and it had been established earlier that caffeine increases attention in healthy adult individuals of both sexes at doses of at least 75 mg. For clarity, the fact that the applicant applied for a proprietary claim will not prevent third parties using this claim, but they cannot rely on the proprietary evidence.

The EU authorised claims for cognition are limited in number and scope. Several EU Member States offer considerable flexibility in wording, which makes the use of claims much more appealing. When advertising products containing iodine, zinc or iron, it is therefore worthwhile to investigate if, in the pertinent countries, flexibility in the wording of the authorized claims is permitted. Furthermore, in a science-based context, the Claims Regulation is not applicable, which allows you plenty of opportunity to communicate your latest R&D on nutrition and cognition, provided that the message is strictly scientific and not commercial. Finally, in the field related to cognition, it is expected that a health claim for black tea will soon be available. ●

Karin Verzijden is attorney at law at Axon Lawyers.

References:

1. https://www.florahealth.com/en/products/ginkgo-biloba/
2. https://www.ebay.com/itm/Bio-Fusion-Mind-Focus-Extra-Strength-60-Capsules-/232660281435?_ul=BO
3. http://www.neuravena.com
4. https://efsa.onlinelibrary.wiley.com/doi/10.2903/j.efsa.2018.5266
5. http://foodhealthlegal.com/?s=caffeine

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Natural Ingredients for Insomnia

Insomnia—a worldwide problem

By Dr Natalia Wszelaki and Irene Wohlfahrt

Insomnia is one of the most prevalent health concerns worldwide.

According to recent surveys[1], 27 percent of respondents in the United States suffer from insomnia, while a staggering 56 percent reported having trouble sleeping. In Europe, 31 percent of the population reported having sleeping problems, compared to 23 percent in Japan and 40 percent in China.[2] Thus, sleep problems constitute a global epidemic that threatens the health and quality of life of up to 45 percent of the world's population.

Over 50 percent of consumers reported sleep-related issues such as difficulty falling asleep or staying asleep, but of these, only 35 percent have tried any OTC sleep aids. This reflects the large potential for the growth of the sleep category in the market. Furthermore, the importance of sleep and its essential role for overall health and wellbeing gets more attention. As a result, Mintel expects the market to continue growing, reaching sales of €719 million by 2018.

Correspondingly, the global insomnia aids market is projected to increase with a CAGR of 4.5 percent. According to Euromonitor, the global consumer health market for calming and sleeping was €1.7 billion in 2014, of which the herbal/traditional calming and sleeping market is 51 percent (€867 million). The same report estimates the US herbal market to be worth €51.5 million; the EU has an estimated herbal market size of €439 million; and the herbal market sizes of Japan and China are €22.9 million and €59.6 million, respectively.

In addition, Mintel reported a recent trend is that the US is increasing growth in the sleep segment, with a corresponding increased demand for wellness products.

Natural remedies for insomnia

The causes for the widespread prevalence of insomnia are manifold. A stressful and hectic lifestyle—typical for Western industrialised nations—is certainly one of the main culprits behind sleepless nights. Other causes are disrupted sleep patterns due to irregular daily working hours or frequent adjustments to different time zones. Also, conditions such as depression, anxiety, or high blood pressure play a role in insomnia, as does any condition that affects well-being such as IBS, chronic pain, or dermatological conditions.

Since insomnia is often a chronic condition, long-term medication with sleeping pills may incur the risk of addiction. This is why many consumers prefer natural sleep aids, which are generally safe and not associated with this risk. Consumers are increasingly aware of advantages of natural remedies and the herbal sectors of the consumer health markets are expected to increase at a much faster rate than synthetic 'sleep aids' market including diphenhydramine or doxylamine.

IN THIS ISSUE The Legal Framework **p.5** PS for Body and Mind **p.14** Table of Contents **p.2**

Since the causes for insomnia encompass a variety of conditions including physical and mental ones, a wide range of natural remedies tackling different conditions is available.

Valerian

Among the traditional herbal remedies for insomnia, valerian (*Valeriana officinalis*) is certainly one of the best known. It has been used as a medicinal herb for millennia, with both Hippocrates and Galen describing its sleep-inducing properties. Ever since, valerian has been consistently listed in the various botanical manuscripts throughout the centuries and used to ease insomnia. Today, the plant has several monographs describing the medicinal properties for both root extract and its essential oil. The extract can be used for the relief of mild nervous tension and sleep disorders. Other preparations such as tea and tinctures can be used for the relief of mild symptoms of mental stress and to aid sleep, based on their long-standing traditional uses.

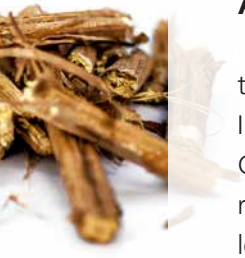
Valerian root's main active constituent, valerenic acid, has been reported to modulate the GABA receptor, which would explain Valerian's sedative properties.[3]

Hops

Hops (*Humulus lupulus*), better known as an ingredient used in beer brewing adding bitterness and flavour, also have mood-altering and anxiolytic actions. In addition, they have a long-standing history as a traditional herbal medicine for insomnia and symptoms such as restlessness, anxiety, irritability, and tension. The active ingredients in hops have not been identified yet.

Hops are often combined with valerian in sleeping aid products. This is because the Committee on Herbal Medicinal Products (HMPC) has compiled a monograph (EMA/HMPC/585558/2007) on the combination, both for Well-Established Use (relief of sleep disorders) and Traditional Use (sleep aid and relief of mild symptoms of mental stress).

Ashwaganda



Another plant used as a sleep remedy is Ashwaganda (*Withania somnifera*), which carries the reference to its use in its Latin name 'somnifera' literally meaning 'sleep-inducing'. Interestingly, ashwaganda is also called 'Indian Ginseng' or 'Schlafbeere' ('sleep berry') in German. In addition, ashwaganda has been used for more than 3,000 years as a traditional remedy in Ayurveda for indications such as mental stress, anxiety, depression, and memory loss. There are several monographs highlighting its adaptogenic properties and traditional use for anxiety and insomnia.

Rhodiola rosea

As mentioned above, stress is a pervading condition often at the root of insomnia. Natural products boosting the body's resilience to stress are called adaptogens. This group of compounds stabilises physiological processes and promotes homeostasis via several mechanisms of action, which were linked with the hypothalamic-pituitary-adrenal axis and the regulation of key mediators of stress response, such as molecular chaperons (e.g. HSP70), stress-activated c-Jun N-terminal protein kinase 1 (JNK1), Forkhead box O (FOXO) transcription factor DAF-16, cortisol and nitric oxide. *Rhodiola rosea*, the Artic root, is one of several plants classified as an adaptogen.

Besides having a history of food use as either a salad or cooked as a spinach-like legume, Rhodiola has also been used in traditional medicine for a variety of disorders, including treatment of anxiety and depression. In Russia and Scandinavia, it has been used for centuries to cope with stress and to increase physical endurance and resistance to high-altitude sickness. It has several monographs on its traditional use as a stress remedy. Its main active ingredients are thought to be rosavin, rosarin, rosin, and salidroside.

Lemon balm

Lemon balm (*Melissa officinalis*) is widely consumed as a tea, though other herbal preparations such as alcoholic extracts and essential oils are also used. Lemon balm has a long history of use as a sleep and digestive aid in traditional and alternative medicine including aromatherapy.

The main active of lemon balm is thought to be rosmarinic acid. The leaves especially contain high amounts of this phytoconstituent (> 30 mg/g).[4]

In the monograph of lemon balm, the European HMPC concluded—on the basis of its long- standing use—lemon balm leaves could be used for the relief of mild symptoms of stress and to aid sleep.

Saffron

Saffron (*Crocus sativus*) is better known as a spice and as a natural dye. Interestingly, only the filaments (stigmas) inside the flower find a use. Saffron has a WHO monograph for its sedative effect, and recent studies support its effectiveness to improve mood in healthy adults, which means that it can be used to reduce stress.

Melatonin

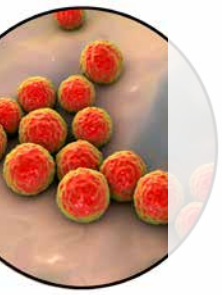
The most popular non-botanical drug used to treat insomnia is melatonin. Melatonin is a naturally occurring hormone influencing the circadian rhythm by anticipating sleep. The European Food Safety Authority (EFSA) has granted two Article 13.1 health claims, for 0.5 g and 1.0 g per dosage, with regard to the alleviation of the subjective feelings of jet leg and to the reduction of time taken to fall asleep, respectively.

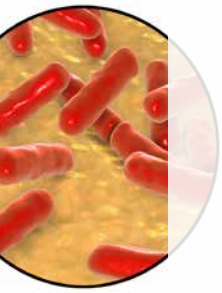
Since melatonin is a body hormone, authorities in several EU countries have concluded a pharmacological effect is involved in its sleep promoting actions—meaning a food product containing a defined dose of melatonin must be considered a drug. Since the pharmacological effect starts at 0.5 g/day and this is also the minimum condition for use of the claims, the above-mentioned health claims cannot be used in Germany and other EU countries not allowing this daily dose in food products, including food supplements. However, this does not negate the efficacy of melatonin against insomnia, as evidenced by the existence of the health claims.

Magnesium, Vitamin B12, CoQ10

For combating the psychological side of insomnia, magnesium has amassed sufficient evidence for EFSA to grant magnesium two sleep-related health claims: 'contributes to normal psychological function' and 'contributes to normal functioning of the nervous system'.

According to research results, some sleep disorders such as difficulty falling or staying asleep, sweating during the second part of the night, waking up between 2 and 4 am, or an increased heart rate might be caused by impaired metabolism in the brain due to a lack of energy. This can be counteracted by taking a combination of vitamin B12 and coenzyme Q10, both of which are effective in contributing to the normal energy-yielding metabolism. Vitamin B12 also holds health claims for this indication.





The gut microbiome

The gut-brain axis and the impact of the gut microbiota on circadian rhythms have not been fully elucidated. However, there is clear evidence of a strong bi-directional relationship between the gut microbiota and the brain. Balanced gut microbiota regulate blood cortisol levels and produce key neurotransmitters for sleep, thus contributing to the circadian rhythm itself. In turn, a disrupted circadian rhythm might lead to intestinal dysbiosis.

Recent studies also suggest the gut microbiome composition is linked with sleep habits as the diversity of the gut microbiota is altered by sleep restriction. Specifically, low abundance of Verrucomicrobia and Lentisphaerae is associated with poor sleep quality.[5] Further research is needed to uncover the complex connections between the gut and overall health.

Meanwhile, this part of the equation should not be overlooked when discussing natural sleep remedies. To ensure lasting treatment effects, a well-rounded approach that includes a re-shaping and maintaining of a balanced gut microbiome is essential. This means dietary interventions and lifestyle modifications in addition to the use of natural sleep remedies.

Since the gut microbiome composition varies among ethnic groups and even among individuals, sleep disorders are another area where personalised nutrition and personalised nutrient supplementation may soon come into focus.

Insomnia is a health issue with a worldwide prevalence. In view of the increasing stress associated with the Western lifestyle, this prevalence is expected to increase in the next decades. At the same time, only about a third of affected people have reportedly used sleeping aids, indicating a largely untapped potential in the market.

Insomnia is also a potentially lasting health issue with many possible causes. Treating it with potentially addictive sleeping aids is associated with a certain risk. At the same time, there is an ongoing trend among consumers towards natural products across all market categories. Correspondingly, many botanicals and natural remedies will see increasing demand in the future, especially those that were traditionally used in the Chinese Medicine, Ayurveda, or European folk medicine.

Some medicinal plants used in these healing systems already have monographs for sleep, while for others, the field of research is wide open. For many traditional remedies, the mode of action and, in some cases, even the active ingredients have not been elucidated. In addition, the sleeping aid potential of many plants still remains unexplored. Products targeting an imbalanced gut microbiome might influence the sleep product category in the future. ●

Dr Natalia Wszelaki is Science and Innovation Consultant at analyze & realize GmbH.

Irene Wohlfahrt is Senior Consultant at analyze & realize GmbH.

References:

1 *Leger D et al. An international survey of sleeping problems in the general population. Current Medical Research and Opinion. 2008; Vol 24, Issue 1.*

2 *http://www.china.org.cn/china/2012-03/21/content_24950107.htm*

3 *Benke D et al. GABA A receptors as in vivo substrate for the anxiolytic action of valerenic acid, a major constituent of valerian root extracts. Neuropharmacology. 2009; 56: 174-81*

4 *Shekarchi M et al. Comparative study of rosmarinic acid content in some plants of Labiatae family. Pharmacogn Mag. 2012; 8: 37-41*

5 *Anderson JR et al. A preliminary examination of gut microbiota, sleep and cognitive flexibility in healthy older adults. Sleep Med. 2017; 38: 104-107*

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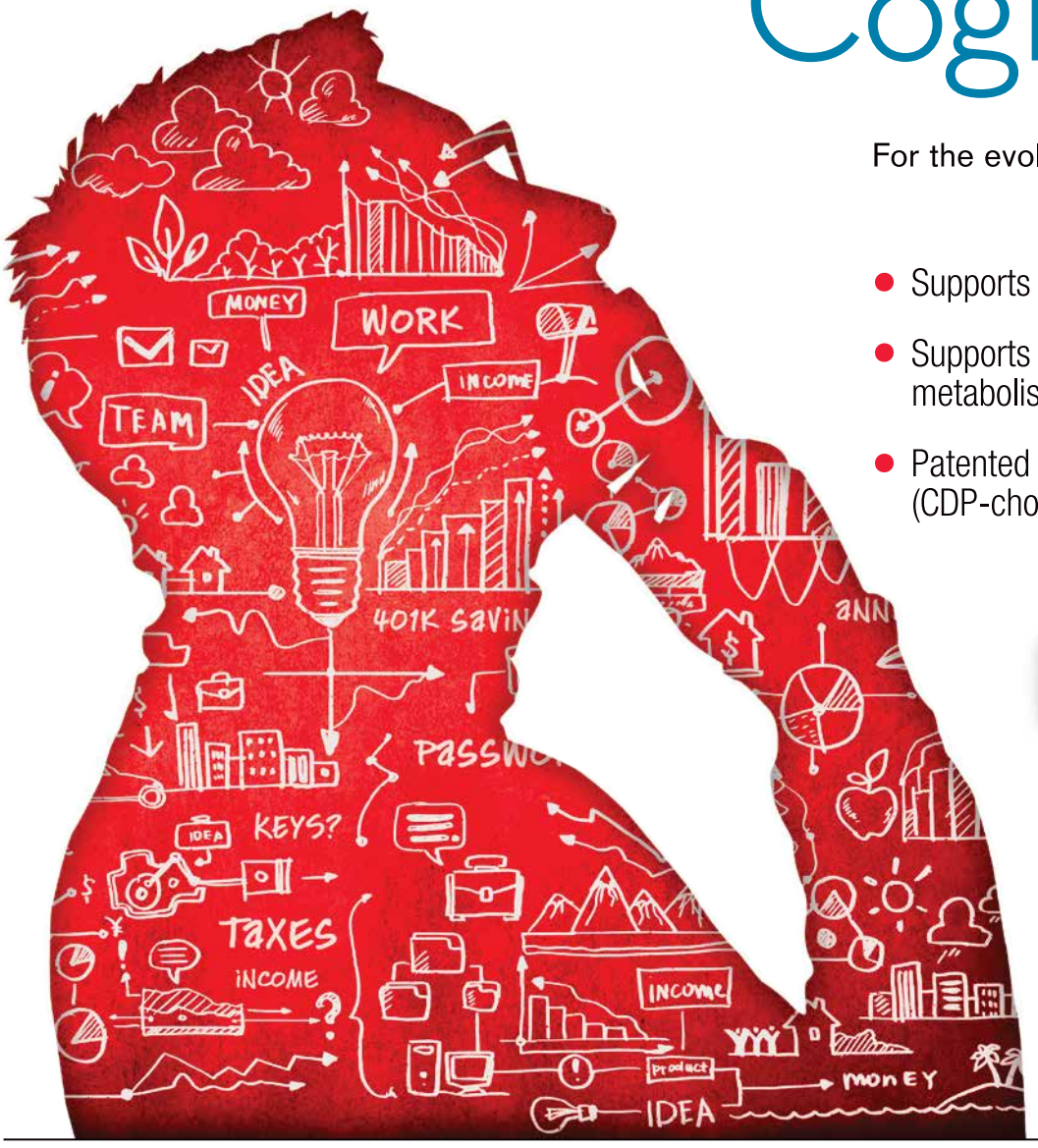

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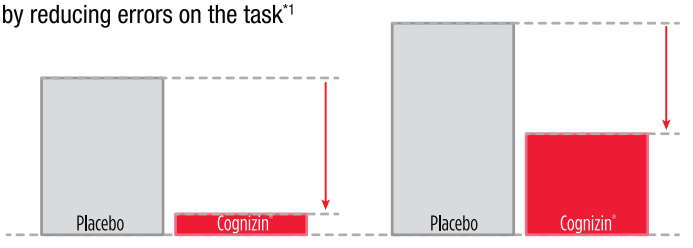

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1. McGlade E. et al. Improved Attentional Performance Following Citicoline Administration in Healthy Adult Women. Food and Nutrition Sciences. 2012;3:769-773.

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Phosphatidylserine:
A NATURAL NUTRIENT FOR BODY AND MIND

By Itay Shafat

Phosphatidylserine (commonly known simply as PS) is a phospholipid and a key building block in cell membranes in plants and animals. In humans, it plays an important role in several cellular processes, such as the activation of cell membrane-bound enzymes, and neuronal signalling. The many benefits of PS as a dietary supplement for cognitive health have been extensively studied in various populations, from children to seniors. Meanwhile, its physical traits—such as the fact it is an amphiphilic molecule, and its lack of organoleptic problems—help make it especially suitable for functional foods. Such benefits, together with growing consumer preference for functional foods over traditional tablets and capsules, mean PS has huge potential in foods for children, seniors, athletes and more.

PS in our diets and as a supplement

Phosphatidylserine occurs naturally in all our cells, with an estimated 30 grams present in every human. Approximately half of this amount (around 13g) is found in the brain (primarily in the cell membranes of neurons) where it is particularly enriched—up to six times more than in other tissues.[1]

PS is already part of the average diet, with small amounts found in dairy products, rice, and beans, and larger amounts in offal and certain fish. However, in recent decades, average consumption levels have declined by an estimated 50 percent. The average daily intake from food in Western countries is now approximately 130 mg—down from as much as 250 mg per day only 30 years ago.[2] Vegetarians, people on reduced-fat diets and children consume even less—as little as 50 mg per day.

As a supplement, PS is produced mainly from soy, though other sources, such as sunflower, fish and krill are also available. PS has been available as a dietary supplement for more than 20 years, and this is currently the main route for consumption. But market trends may change that in the future as more and more brands use PS to make food products functional.

The benefits of PS for cognition and brain function

Supplementation has been shown to increase the brain's ability to metabolise glucose, leading to increased activity.[3] Phosphatidylserine also helps control communication between brain cells and has been shown to participate in synaptic plasticity processes, which may explain its beneficial effect on memory and learning. Research has also shown PS is crucial for the survival of neurons.[4] This is very important because humans are born with a full set of neurons which do not reproduce throughout the lifespan.

IN THIS ISSUE Natural Ingredients for Insomnia **p. 9** Takeaways **p.19** Table of Contents **p.2**

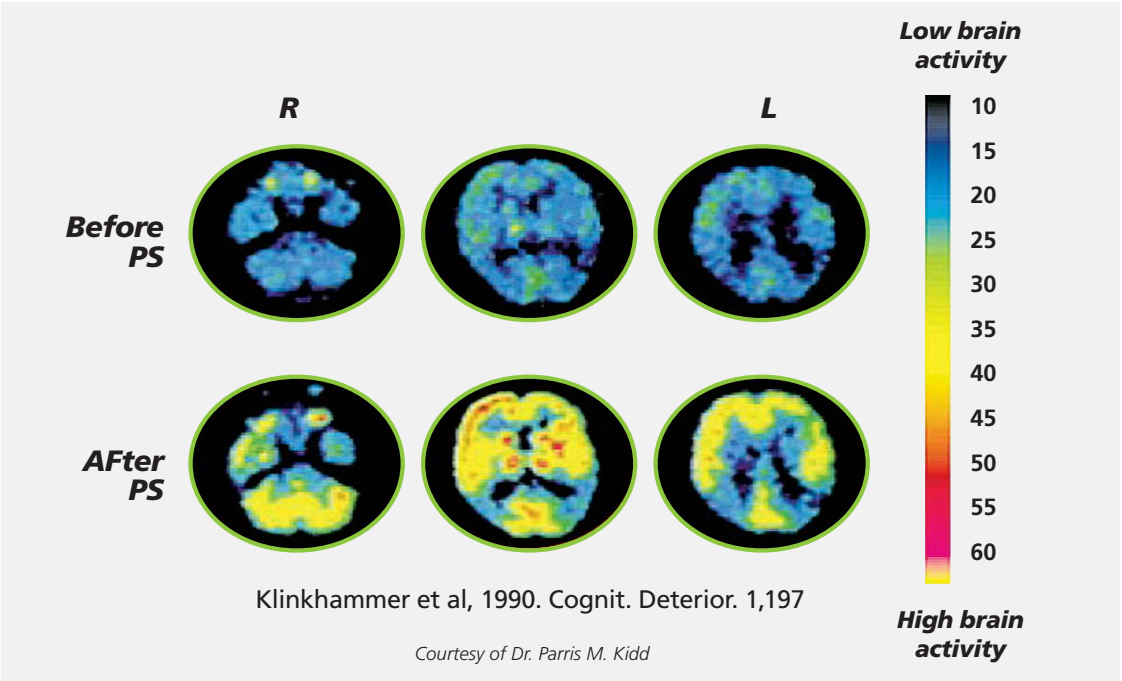


Figure 1: Ingestion of PS leads to increased brain activity. Before intake of PS, the brain is coloured (in a PET scan) blue and green (upper panel), indicating low activity. After intake of PS, it is coloured yellow and orange (lower panel), indicating high activity[3]

The benefits of PS for memory and overall cognition also include expansion of learning capacity and in some cases faster recall. Many people who supplement with PS report it gives them more mental energy, along with improved focus and concentration. Supplementation with PS has a long-term effect at least three months after sufficient intake duration as it becomes an inherent part of the brain.

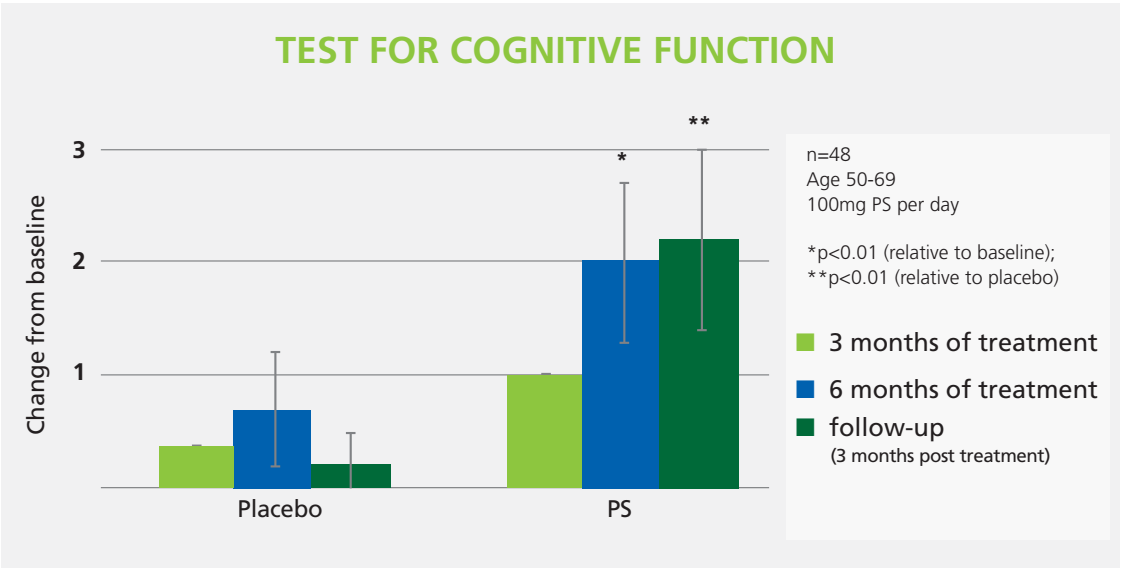


Figure 2: Ingestion of PS leads to improved cognition, even three months after intake has stopped. Once PS is consumed for sufficient time (between three and six months, blue and green bars respectively) the effects are sustained (grey bar)[5]

Overall, more than 50 clinical studies, looking at PS from various sources, have tested its benefits for cognitive function. They consistently show the ingestion of PS has a positive effect on memory, learning, attention, executive function and more.

This body of research, carried out in a wide range of populations—but particularly in seniors–has led the US FDA to approve two qualified health claims for PS:

Consumption of phosphatidylserine may reduce the risk of dementia in the elderly*

Consumption of phosphatidylserine may reduce the risk of cognitive dysfunction in the elderly*

{Qualification statement} *Very limited and preliminary scientific research suggests that phosphatidylserine may reduce the risk of dementia/cognitive dysfunction in the elderly[6]

To date, PS is the only solution with an FDA-approved cognitive claim.

PS for stress

The clinical foundation for the benefits of PS is therefore extensive. While most of the studies have focused on cognition and brain function, a number of other positive effects have been demonstrated—for example on stress.

Modern life can be highly stressful—33 percent of men and 43 percent of women report their stress levels have increased over the past year and in some countries, stress is responsible for an estimated 40 percent of work-related illness.[7,8]

When stressed, the body reacts by secreting several hormones into the blood stream, each controlling the release of the next. The end product of this cascade—termed the hypothalamus-adrenal axis—is cortisol, sometimes known as the 'stress hormone'. While elevated cortisol levels are a normal physiological reaction to stress, they can have deleterious effects which are believed to be responsible, at least in part, for the connection between stress and various illnesses.[9,10] It is thus advisable to reduce elevated cortisol levels. Ingestion of PS has been shown in clinical studies testing a variety of stress models to blunt the elevation in cortisol following a stressful event (physical or mental) and to alleviate the accompanying stressful feeling.[11,12] Since so many people are seeking refuge from their daily stress, it makes sense to offer them a natural, safe and clinically proven solution.

PS for sports performance

Sport is growing in importance in modern life, with people in all age groups increasingly willing to invest time and money in it. As a result, sports nutrition products that were once predominantly used by core athletes and body builders are increasingly popular in wider consumer segments. Sports nutrition may be one of the best examples for a functional food industry, as almost all sports nutrition products—powders, bars, shakes or others—may be considered functional, pertaining to assist in muscle build-up, to give energy, to allow trainers better performance, better recovery and more.

In addition to its potential for the brain, intake of PS has been shown to offer beneficial effects to humans dealing with sports. Results from studies looking at a variety of exercise models (including cycling, running, soccer and weight-lifting) show intake of PS leads to improved peak performance, quicker recovery, and reduced muscle soreness.

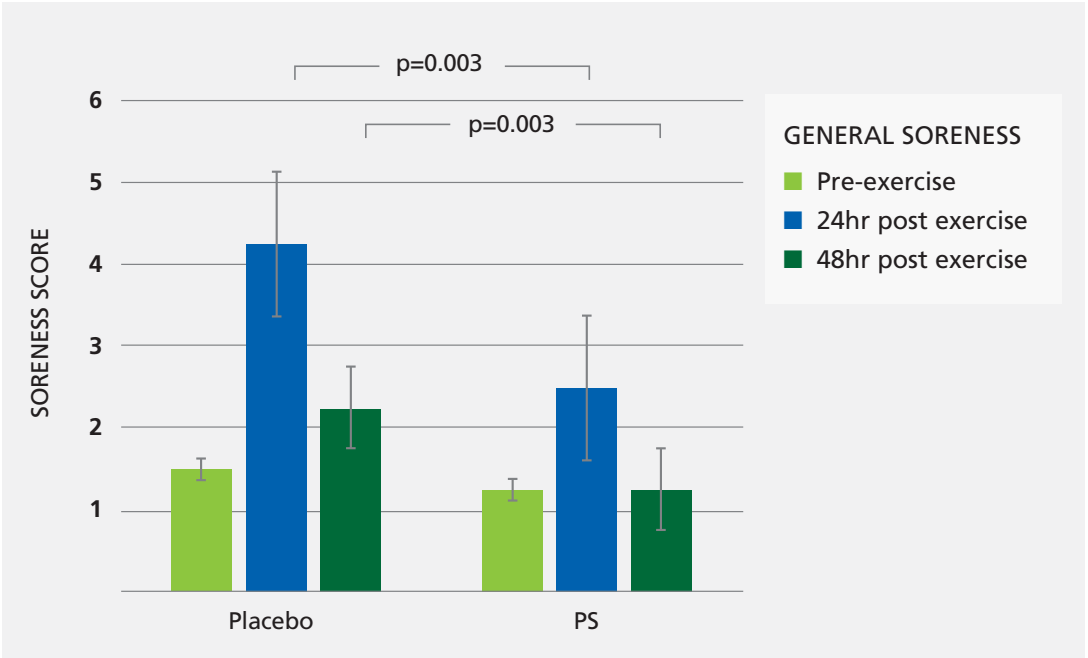


Figure 3: PS intake reduces perception of muscle soreness, both 24 and 48 hours after training, as found in a clinical study mimicking a model of soccer[13]

Additional studies have found PS to be effective for the improvement of mood and for skin health.

Safety and dosage

In the many studies carried out, PS has been shown to be safe and well tolerated. It has been approved by regulatory authorities across the world, including the United States, Australia, European Union, and China, and has a history of use by numerous consumers.

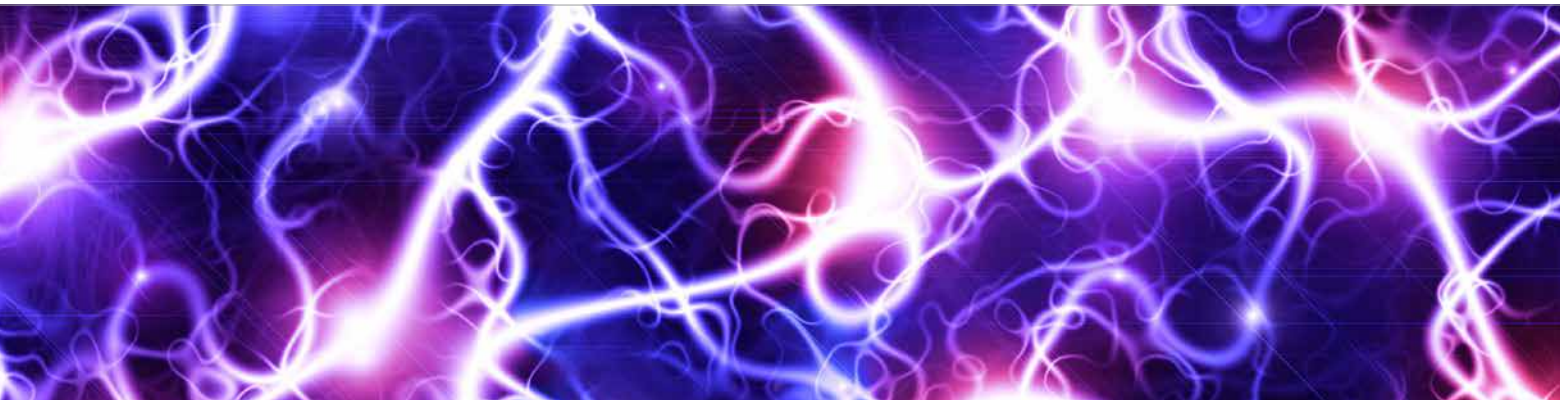
The recommended dosage range is between 100 and 300 mg per day. It is generally recommended to start consuming PS at a relatively high dose and to reduce it after one to three months (because PS seems to accumulate).

Use of PS in functional foods

Many people in many parts of the world simply do not consume dietary supplements. In some countries, pill fatigue is taking root and consumers are actively seeking alternatives to supplements. In others, most noticeably in Southeast Asia, cultural, habitual and economic factors mean people consume dietary nutrients only when they are included in foods. Moreover, most supplement forms are not suitable for children, or not appealing to their parents. Thus, many children whose diet is poor in important nutrients get them only through fortified or functional foods.

PS from plant sources (soy and sunflower) is organoleptically inert, making it suitable for foods. Its physical characteristics, especially its emulsifying properties, make its inclusion in foods easy in most cases. Thus, more and more brands are using PS in functional foods, and recognition of this interesting ingredient is growing among consumers as well as manufacturers.

Dr. Itay Shafat is Cognitive Line Product Manager at Frutarom Health



References

1 *Svennerholm, L. Distribution and fatty acid composition of phosphoglycerides in normal human brain. J Lipid Res 9, 570-579 (1968).*

2 *Hamm, m. Nutritional-scientific statement on the change of nutritive provision with phosphatidylserine. (2002).*

3 *Klinkhammer, P., Szelies, B. & Heiss, W. D. Effect of Phosphatidylserine on Cerebral Glucose Metabolism in Alzheimer's Disease. Dementia and Geriatric Cognitive Disorders 1, 197-201 (1990).*

4 *Akbar, M., Calderon, F., Wen, Z. & Kim, H. Y. Docosahexaenoic acid: a positive modulator of Akt signaling in neuronal survival. Proceedings of the National Academy of Sciences of the United States of America 102, 10858-10863, doi:10.1073/pnas.0502903102 (2005).*

5 *Kato-Kataoka, A. et al. Soybean-derived phosphatidylserine improves memory function of the elderly Japanese subjects with memory complaints. J Clin Biochem Nutr 47, 246-255, doi:10.3164/jcbn.10-62 (2010).*

6 *FDA. Phosphatidylserine and Cognitive Dysfunction and Dementia (Qualified Health Claim: Final Decision Letter), <http://www.fda.gov/Food/IngredientsPackagingLabeling/LabelingNutrition/ucm072999.htm> (2003).*

7 *APA. Impact of Stress, <http://www.apa.org/news/press/releases/stress/2012/impact.aspx> (2012).*

8 *HSE. (ed Health and Safety executive) (UK, 2015).*

9 *Heshmati, H. M. et al. Effects of the circadian variation in serum cortisol on markers of bone turnover and calcium homeostasis in normal postmenopausal women. The Journal of clinical endocrinology and metabolism 83, 751-756, doi:10.1210/jcem.83.3.4627 (1998).*

10 *Simmons, P. S., Miles, J. M., Gerich, J. E. & Haymond, M. W. Increased proteolysis. An effect of increases in plasma cortisol within the physiologic range. The Journal of clinical investigation 73, 412-420, doi:10.1172/JCI111227 (1984).*

11 *Hellhammer, J. et al. Effects of soy lecithin phosphatidic acid and phosphatidylserine complex (PAS) on the endocrine and psychological responses to mental stress. Stress 7, 119-126 (2004).*

12 *Starks, M. A., Starks, S. L., Kingsley, M., Purpura, M. & Jager, R. The effects of phosphatidylserine on endocrine response to moderate intensity exercise. J Int Soc Sports Nutr 5, 11, doi:10.1186/1550-2783-5-11 (2008).*

13 *Kingsley, M. I., Wadsworth, D., Kilduff, L. P., McEneny, J. & Benton, D. Effects of phosphatidylserine on oxidative stress following intermittent running. Medicine and science in sports and exercise 37, 1300-1306 (2005).*

Takeaways for Your Business

The 100 billion neurones and 100 trillion synapses in the human brain require around 20 percent of all the energy the body needs each day—meaning nutrition for cognitive health is imperative. And consumer interest is reflecting this with sales of supplements for cognition up 93 percent from last year in the United States, according to Packaged Facts. Growth is only expected to continue as ageing consumers in particular prioritise brain health.

Brain development is understood to be similar to bone health in the early years of life: the first life stages require building the foundation, before the maintenance phase continues throughout the life span. The cumulative benefits of a healthy diet for brain health and development should be carefully communicated to consumers, as there's evidence to suggest an unhealthy diet in the younger years translates to a greater rate of cognitive decline later in life.

Cognitive health products are not limited to ageing consumers looking to prevent cognitive decline; people in all demographic groups are increasingly interested in natural ingredients for brain health. A survey by Innova Market Insights found 73 percent of consumers aged 55 years old and over were very concerned about brain health, with 40 percent of consumers aged between 26 and 35 years old reporting the same. The younger generations are struggling with working and studying long hours, seeking products to help evade burnout and fatigue—these consumers want ingredients for focus, mental acuity, and relief from their daily stress.

Women constitute a large consumer base for cognitive health products at many stages of life, including pregnancy and menopause. Expectant mothers are well aware of the need for precise nutrition to feed their baby's growing brains and recognise the benefits of ingredients including omega-3s and folate. Choline is another important ingredient at this stage and consumer acceptance here familiarises them with the health benefits, which can be helpful later in life during menopause too. Many women report a 'brain fog' as oestrogen levels decrease which diminishes endogenous choline production—supplementation is therefore beneficial.

Look beyond the traditional consumer groups to emerging opportunities, particularly in sports and esports. Ingredients such as omega-3s, phosphatidylserine, *Bacopa monnieri* and *Gingko biloba* are gaining popularity among sportspeople in all arenas for improvements in focus and reaction times. While caffeine remains the ingredient of choice for attention and alertness, positioning supplements as the healthier alternative to energy drinks promises potential.

Remember the importance of communicating the research behind your products; science-backed ingredients resonate with consumers looking for trustworthy brands and those looking to 'hack their brains' will be particularly discerning when it comes to study results.

IN THIS ISSUE PS for Body and Mind **p.14** Contacts **p.21** Table of Contents **p.2**

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Jon Benninger
Vice President, Health & Nutrition
jon.benninger@informa.com

Heather Granato
Vice President, Content
heather.granato@informa.com

Danielle Dunlap
Vice President, Marketing Services
danielle.dunlap@informa.com

Andrew Rosseau
Art Director

Kristen Raymond
Program Coordinator

Informa Exhibitions LLC
2020 N. Central Ave, Suite 400
Phoenix, AZ 85004
United States

Phone: +1 480 990 1101
www.naturalproductsinsider.com

Chris Lee
Managing Director, GHNN Europe
chris.lee@informa.com

Julia Wocka-Gowda
Head of Sales
julia.gowda@informa.com

Maria Sidiropoulou
Client Success Manager
maria.sidiropoulou@informa.com

Colin Williams
Senior Marketing Manager
colin.williams@informa.com

Jade Sterling
Associate Editor
jade.sterling@informa.com

Informa Exhibitions
2nd Floor
5 Howick Place
London SW1P 1WG
United Kingdom

Phone: +44 (0) 20 3777 3616
www.vitafoods.eu.com

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