Health Canada Santé Canada

NATURAL HEALTH PRODUCT

COGNITIVE FUNCTION PRODUCTS

This monograph is intended to serve as a guide to industry for the preparation of Product Licence Applications (PLAs) and labels for natural health product market authorization. It is not intended to be a comprehensive review of the medicinal ingredients described within.

Notes

- Text in parentheses is additional optional information which can be included on the label at the applicant's discretion.
- The solidus (/) indicates that either term and/or statement may be selected on the label.

Date January 30, 2026

Proper name(s), Common name(s), Source information

Table 1.1. Proper name(s), Common name(s), Source information for ingredients with nervine action

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
Anemone pulsatilla	• European pasqueflower • Pasqueflower • Pulsatilla	N/A	*Anemone pulsatilla*	Herb top	Dry[1]
Avena sativa	• Common oat • Oat • Red oat • Side oat • Tree oat	N/A	*Avena sativa*	• Seed • Herb top	Dry
Hypericum perforatum	• Goatweed • Hypericum • St. John's wort • St. John's-wort	N/A	*Hypericum perforatum*	Herb top	Dry
• 5-Hydroxy-L-tryptophan • L-5-Hydroxytryptophan	• L-5-HTP • L-5-Hydroxytryptophan	N/A	*Griffonia simplicifolia*[2]	Seed	N/A
		N/A	*Saccharomyces cerevisiae*[2]	Whole cell for biosynthesis	N/A
		N/A	*Escherichia coli*[2]	Whole cell for biosynthesis	N/A
		L-5-HTP[3]	N/A	N/A	N/A
Nepeta cataria	• Catmint • Catnep		*Nepeta cataria*	Herb top	Dry

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
	• Catnip • Catswort • Field balm				
Matricaria chamomilla	• Blue chamomile • Chamomile • Common chamomile • German chamomile • Hungarian chamomile • Matricaria • Scented chamomile • Scented mayweed • Sweet false chamomile • True chamomile • Wild chamomile	N/A	*Matricaria chamomilla*	Flower	Dry
Melissa officinalis	• Balm • Bee balm • Lemon balm • Melissa	N/A	*Melissa officinalis*	Herb top	Dry
Panax quinquefolius	• American ginseng • Canadian ginseng • Five-leaved ginseng • Occidental ginseng • Sang • Sheng • Xi yang shen	N/A	*Panax quinquefolius*	Root	Dry
Scutellaria lateriflora	• Helmet flower • Hoodwort • Mad-dog scullcap • Quarter bonnet • Scullcap • Skullcap • Virginian skullcap	N/A	*Scutellaria lateriflora*	Herb top	Dry

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
Stachys officinalis	• Bishop's-wort • Purple betony • Wood betony	N/A	*Stachys officinalis*	Herb top	Dry
Tilia cordata	• Linden • Littleleaf linden • Small-leaf European linden • Small-leaf lime • Small-leaf lime tree • Small-leaf linden • Tilia	N/A	*Tilia cordata*	Flower	Dry
Tilia platyphyllos	• Big-leaf linden • Broadleaf lime • Large-leaf lime • Large-leaf linden • Linden • Tilia	N/A	*Tilia platyphyllos*	Flower	Dry
Tilia x europaea	• European Lime tree • European linden • Lime • Lime tree • Linden • Tilia	N/A	*Tilia x europaea*	Flower	Dry
Turnera diffusa	Damiana	N/A	*Turnera diffusa*	• Leaf • Leaf and stem	Dry
Withania somnifera	• Asgandh • Ashwagandha • Asvagandha • Winter-cherry • Withania	N/A	*Withania somnifera*	Root	Dry

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: EMA 2008; Bone 2003; Hoffman 2003; Lemaire and Adosraku 2002; API 2001; Bradley 1992; Williamson et al. 1988; BHP 1983; Fellows and Bell 1970; Remington and Wood 1918; BPC 1911.
[1]Do not use the fresh plant (Bone 2003; Hoffman 2003; Bradley 1992; BHP 1983).
[2]Isolate
[3]Synthetic

Table 1.2. Proper name(s), Common name(s), Source information for ingredients with sedative action

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
Eschscholzia californica	California-poppy	*Eschscholzia californica*	• Herb top • Herb top flowering	Dry
Humulus lupulus	• Bine • European hop • Hop • Hops	*Humulus lupulus*	Strobile	Dry
Passiflora incarnata	• Apricot-vine • Maypop • Maypop passionflower • Passionflower	*Passiflora incarnata*	Herb top	Dry
Valeriana officinalis	• Common valerian • Garden-heliotrope • Garden valerian • Valerian	*Valeriana officinalis*	• Root • Root and rhizome	Dry

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: Hoffman 2003; Williamson et al. 1988.

Table 1.3. Proper name(s), Common name(s), Source information for ingredients with cognitive support action

Proper name(s)	Common name(s)	Source information				
		Source ingredient(s)	Source material(s)	Organism group(s)	Part(s)	Preparation(s)
(2R)-2-(Acetyloxy)- 3-carboxy-N,N,N-trimethyl-1-propanaminium inner salt	Acetylcarnitine	• Acetyl-L-carnitine arginate dihydrochloride[1] • Acetyl L-carnitine hydrochloride[1]	N/A	N/A	N/A	N/A
Bacopa monnieri	• Bacopa • Moneywort • Water hyssop	N/A	*Bacopa monnieri*	N/A	• Herb top • Whole plant	Dry
• 2-[[[(2R)-2,3-Dihydroxypropoxy]hydroxyphosphinyl]oxy]-N,N,N-trimethylethanaminium hydroxide inner salt • d-Choline hydroxide 2,3-	Choline alfoscerate	Choline alfoscerate[1]	N/A	N/A	N/A	N/A

Proper name(s)	Common name(s)	Source information				
		Source ingredient(s)	Source material(s)	Organism group(s)	Part(s)	Preparation(s)
dihydroxypropyl hydrogen phosphate inner salt • L-alpha-Glycerylphosphorylcholine						
• Choline cytidine 5'-pyrophosphate (ester) • Cytidine 5'-(trihydrogen diphosphate) P'-[2(trimethylammonio)ethyl] ester inner salt • Cytidine 5'-diphosphocholine	Citicoline	• Citicoline sodium[1] • Citicoline[1]	N/A	N/A	N/A	N/A
Cod liver oil	• Cod liver oil • Lecoris Aselli Oleum	N/A	N/A	Gadidae[3]	Liver	N/A
Eleutherococcus senticosus	• Ci wu jia • Eleuthero • Siberian ginseng	N/A	*Eleutherococcus senticosus*	N/A	• Root • Root and rhizome	Dry
Fish oil	Fish oil	N/A	N/A	• Ammodytidae • Carangidae • Clupeidae • Engraulidae • Gadidae[3] • Osmeridae • Salmonidae • Scombridae	Whole	N/A
Ginkgo biloba	• Ginkgo • Ginkgo biloba • Maidenhair-tree • Baiguo • Icho	N/A	*Ginkgo biloba*	N/A	Leaf	N/A
Panax ginseng	• Asian ginseng • Chinese ginseng • Hong shen	N/A	*Panax ginseng*	N/A	• Root • Rootlet	Dry

Proper name(s)	Common name(s)	Source information				
		Source ingredient(s)	Source material(s)	Organism group(s)	Part(s)	Preparation(s)
	• Korean ginseng • Korean red ginseng • Oriental ginseng • Panax ginseng • Red ginseng • Ren shen					
Phosphatidyl serine	Phosphatidyl serine	N/A	*Helianthus annuus*[2]	N/A	Seed	N/A
		Phosphatidylserine-enriched soy lecithin[1]	N/A	N/A	N/A	N/A
		Phosphatidylserine[1]	N/A	N/A	N/A	N/A
Rhodiola rosea	• Hong jing tian • King's-crown • Rhodiola • Roseroot	N/A	*Rhodiola rosea*	N/A	• Root • Root and rhizome	Dry
Schizochytrium spp.	Schizochytrium Oil	N/A	*Schizochytrium spp.*	N/A	Whole	N/A
• (S)-alpha-Amino-4-hydroxybenzenepropanoic acid • L-Tyrosine	• L-Tyrosine • Tyrosine	• L-Tyrosine[1] • L-Tyrosine ethyl ester[1] • N-Acetyl-L-tyrosine[1]	N/A	N/A	N/A	N/A
Withania somnifera	• Asgandh • Ashwagandha • Asvagandha • Winter-cherry • Withania	N/A	*Withania somnifera*	N/A	Root	Dry

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: NHPID 2025; Yurko-Mauro et al. 2010; Calabrese et al. 2008; Bone 2003; De Jesus Moreno Moreno 2003; API 2001; Parnetti et al. 2001; Barbagallo et al. 1994; Parnetti et al. 1993; Canal et al. 1991.

[1]Synthetic

[2]Isolate

[3]For cod liver oil and fish oil, the species common name can be listed as source information on the label instead of the organism group. Fish oil corresponds to oil from the whole body of one or more of species of the families listed in the table in its natural and/or concentrated triglyceride/triacylglycerol form and/or its concentrated esterified form.

Table 1.4. Proper name(s), Common name(s), Source information for caffeine and ingredients containing caffeine

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
• 1,3,7-Trimethylxanthine • 3,7-Dihydro-1,3,7-trimethyl-1H-purine-2,6-dione	Caffeine	• Caffeine[1] • Caffeine citrate[1]	N/A	N/A	N/A
		N/A	*Camellia sinensis*[2]	Leaf	N/A
		N/A	• *Coffea arabica*[2] • *Coffea canephora*[2]	Seed	N/A
		N/A	• *Cola acuminata*[2]	Seed	N/A
		N/A	• *Ilex paraguariensis*[2] • *Ilex guayusa*[2]	Leaf	N/A
		N/A	• *Paullinia cupana*[2]	Seed	N/A
		N/A	• *Theobroma cacao*[2]	Seed	N/A
Ilex paraguariensis	• Brazilian tea • Mate • Paraguayan tea • Paraguay tea • St Bartholomew's tea • Yerba mate	N/A	*Ilex paraguariensis*	Leaf	Dry
Paullinia cupana	Guarana	N/A	*Paullinia cupana*	Seed	Dry

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: EMA 2013; ESCOP 2009; Bradley 2006; Kennedy et al. 2004; Taylor 2003; Barnes et al. 2002; BHP 1983.

[1]Synthetic

[2]Isolate. If caffeine is sourced from *Camellia sinensis, Coffea arabica, Coffea canephora, Cola acuminata, Ilex paraguariensis, Ilex guayusa, Paullinia cupana* or *Theobroma cacao*, it must be isolated and purified. Extracts of *Ilex paraguariensis* and *Paullinia cupana* must be represented separately. This monograph does not support extracts of *Camellia sinensis, Coffea arabica, Coffea canephora, Cola acuminata, Ilex guayusa* or *Theobroma cacao*.

Table 1.5. Proper name(s), Common name(s), Source information for ingredients with relaxation action

Proper name(s)	Common name(s)	Source information		
		Source ingredient(s)	Source material(s)	Part(s)
4-Aminobutanoic acid	• GABA • gamma-Aminobutyric acid	N/A	*Lentilactobacillus hilgardii*[2]	Whole cell for biosynthesis
		N/A	*Levilactobacillus brevis*[2]	Whole cell for biosynthesis
		N/A	*Laminaria japonica*[2]	Whole
		4-Aminobutanoic acid[1]	N/A	N/A
• L-Theanine • N-Ethyl-L-glutamine	L-Theanine	N/A	*Camellia sinensis*[2]	Leaf
		L-Theanine[1]	N/A	N/A

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: Kanehira et al. 2011; Abdou et al. 2006; Yamakoshi et al. 2006.
[1]Synthetic
[2]Isolate

Table 1.6. Proper name(s), Common name(s), Source information for ingredients with adaptogen action

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
Asparagus racemosus	• Shatamuli • Shatavari	*Asparagus racemosus*	Root	Dry
Astragalus membranaceus	• Astragalus • Huangqi • Huang qi • Membranaceus milk vetch • Membranous milk-vetch • Milk vetch root • Mo jia huang qi	*Astragalus membranaceus*	Root	Dry
Eleutherococcus senticosus	• Ci wu jia • Eleuthero • Siberian ginseng	*Eleutherococcus senticosus*	• Root • Root and rhizome	Dry
Ganoderma lucidum	• Ganoderma • Ling zhi • Reishi	*Ganoderma lucidum*	• Cultured mycelium • Fruiting	Dry

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
			body • Mycelium	
Glycyrrhiza glabra	• Guang guo gan cao • Licorice • Liquorice	*Glycyrrhiza glabra*	• Root • Root and stolon	Dry
Ocimum tenuiflorum	• Holy basil • Rama tulsi • Sacred basil • Tulsi	*Ocimum tenuiflorum*	Leaf	Dry
Panax ginseng	• Asian ginseng • Chinese ginseng • Hong shen • Korean ginseng • Korean red ginseng • Oriental ginseng • Panax ginseng • Red ginseng • Ren shen	*Panax ginseng*	• Root • Rootlet	Dry
Panax quinquefolius	• American ginseng • Canadian ginseng • Occidental ginseng • Sang • Shang • Xi yang shen	*Panax quinquefolius*	Root	Dry
Rhodiola rosea	• Hong jing tian • King's-crown • Rhodiola • Roseroot	*Rhodiola rosea*	• Root • Root and rhizome	Dry
Schisandra chinensis	• Chinese Magnoliavine • Schisandra • Wu wei zi	*Schisandra chinensis*	Fruit	Dry
Tinospora cordifolia	Guduchi	*Tinospora cordifolia*	Stem	Dry
Withania somnifera	• Asgandh • Ashwagandha • Asvagandha • Winter-cherry • Withania	*Withania somnifera*	• Root • Whole plant	Dry

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: Upton 2012; Winston and Kuhn 2008; Winston and Maimes 2007; WHO 2004; Bone 2003; Hoffman 2003; Thomsen 2002; Williamson 2002; API 2001; Blumenthal et al. 2000; Upton 1999; WHO 1999; Bradley 1992; BHP 1983.

Table 1.7. Proper name(s), Common name(s), Source information for complementary ingredients

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
[5R-(5alpha,9beta, 11E)]-5-Amino-11-ethylidne-5,6,9, 1-tetrahydro-7-methyl-5,9-methano cycloocta [b]pyridine-2(1H)-one	Huperzine A	N/A	*Huperzia serrata*[2]	Whole plant	Dry
		Huperzine A[1]	N/A	N/A	N/A
7,9-Dihydro-1,3,7,9-tetramethyl-1H-purine-2,6,8(3H)-trione	Theacrine	Theacrine[1]	*Camellia sinensis*[2]	Leaf	Dry
			Theobroma grandiflorum[2]	Fruit	Dry
		Theacrine[1]	N/A	N/A	N/A
• 3,7-Dihydro-3,7-dimethyl-1H-purine-2,6-dione • 3,7-Dimethylxanthine	Theobromine	N/A	*Theobroma cacao*[2]	Seed	Dry
		Theobromine[1]	N/A	N/A	N/A
Huperzia serrata	• Toothed club-moss • Toge-shiba	N/A	*Huperzia serrata*	Whole plant	Dry

References: Proper names: NHPID 2025; Common names: NHPID 2025; Source information: NHPID 2025; Martinez-Pinilla et al. 2015; Ma et al. 2007; Kihlman 1977.
[1]Synthetic
[2]Isolate

Route of administration

Oral

Dosage form(s)

This monograph excludes foods or food-like dosage forms as indicated in the Compendium of Monographs Guidance Document.

Acceptable dosage forms for oral use are indicated in the dosage form drop-down list of the web-based Product Licence Application form for Compendial applications.

Use(s) or Purpose(s)

Refer to Tables 2.1 to 2.6. below.

Notes

- The recommended uses can be combined on the product label if from the same traditional or non-traditional system of medicine.
- The terms ‘Helps’ or ‘Helps to’ can be used interchangeably on the label.

Dose(s)

Subpopulation(s)

Adults 18 years and older

Quantity(ies)

Refer to Tables 2.1 to 2.7. below.

Notes:

- Methods of preparation: Solvents allowed for the methods of preparation, Non-Standardized Extracts “Dry extract” and Non-Standardized Ethanolic Extracts “Dry extract” as part of this monograph are ethanol and/or water only, unless otherwise specified. For Non-Standardized Aqueous Extracts “Dry extract”, water is the only solvent allowed.
- When the method of preparation 'decoction' or 'infusion' is listed as part of the acceptable methods of preparation, the method of preparation 'decoction concentrate' or 'infusion concentrate' is also applicable.

Table 2.1. Cognitive function uses or purposes and associated daily doses for ingredients with nervine action

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
(Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (nervine/calmative)	*Anemone pulsatilla* (Pasqueflower)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.03-0.6 grams dried herb top, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	0.1-0.9 grams dried herb top, per day

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
	Avena sativa (Oat)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	• 0.6-20 grams dried seed, per day • 3 grams dried herb top, per day
	Nepeta cataria (Catnip)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.2-12 grams dried herb top, per day
	Panax quinquefolius (Canadian/American ginseng)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.5-12 grams dried root, per day
	Tilia cordata (Small-leaf linden)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-12 grams dried flower, per day
	Tilia platyphyllos (Large-leaf linden)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-12 grams dried flower, per day
	Tilia x europaea (European Linden)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-12 grams dried flower, per day
	Turnera diffusa (Damiana)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1.5-4 grams dried leaf/leaf and stem, per day
(Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (nervine/calmative)	*Hypericum perforatum* (St. John's wort)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-12.6 grams dried herb top, per day; Not to exceed 4.2 grams per single dose
Used in Herbal Medicine to help relieve restlessness and/or nervousness (nervine/calmative) AND/OR (Used in Herbal Medicine to) help(s) relieve sleep		Standardized Extracts (Dry extract)	600-1800 milligrams of dried herb top extract, per day, standardized to 3-6% hyperforin and/or 0.12- 0.28% hypericin; Not to exceed 600 milligrams of extract per

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
disturbances associated with mood imbalance			single dose
Helps (to) relieve sleep disturbances associated with mood imbalance	L-5-Hydroxytryptophan (L-5-HTP)	N/A	100-200 milligrams, per day
(Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (which helps to promote sleep) (nervine/calmative)	*Matricaria chamomilla* (German chamomile)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-24 grams dried flower, per day
	Melissa officinalis (Lemon balm)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.4-13.5 grams dried herb top, per day
	Scutellaria lateriflora (Skullcap)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.25-12 grams dried herb top, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	3-12 grams dried herb top, per day
	Stachys officinalis (Wood betony)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-4 grams dried herb top, per day
Traditionally used in Ayurveda to balance aggravated Vata (nervine) AND/OR Traditionally used in Ayurveda to help relieve restlessness and/or nervousness (which helps (to) promote sleep).	*Withania somnifera* (Ashwagandha)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-6 grams dried root, per day

[1]References consulted for the uses or purposes: Sutanto et al. 2024; ESCOP 2009; Bradley 2006; Bone 2003; Hoffman 2003; Barnes et al. 2002; Kapoor 2001; Blumenthal et al. 2000; Upton 2000; Wheatley 1999; Poldinger et al. 1991; Williamson et al. 1988; Ellingwood 1983; Felter and Lloyd 1983; Soulairac and Lambinet 1977; Grieve 1971.

[2]References consulted for the doses: Sutanto et al. 2024; CNF 2023; EMA 2008; Anghelescu et al. 2006; Bone 2003; Hoffman 2003; API 2001; Kapoor 2001; Blumenthal et al. 2000; Bradley 1992; Williamson et

al. 1988; BHP 1983; Ellingwood 1983; Felter and Lloyd 1983; Soulairac and Lambinet 1977; Remington and Wood 1918; BPC 1911.

Table 2.2. Cognitive function uses or purposes and associated daily doses for ingredients with sedative (soporific) action

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
(Traditionally) used in Herbal Medicine as a sleep aid (during times of mental stress). AND/OR (Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (calmative).	*Eschscholzia californica* (California-poppy)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.2-3 grams dried herb top (flowering), per day
	Humulus lupulus (Hops)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.5-6 grams dried strobile, per day
	Passiflora incarnata (Passionflower)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.25-8 grams dried herb top, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	1-8 grams dried herb top, per day
(Traditionally used in Herbal Medicine as a) sleep aid/(to) help(s) to promote sleep. AND/OR (Traditionally) used in Herbal Medicine to relieve restlessness and/or nervousness (calmative)	*Valeriana officinalis* (Valerian)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.3-12 grams dried root/root and rhizome, per day; Not to exceed 3.6 grams per single dose
		Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.3-12 grams dried root/root and rhizome, per day[3]; Not to exceed 3.6 grams per single dose and: 0.05-0.90% valerenic acid OR 0.10-0.90% sesquiterpenic acids

[1]References consulted for the uses or purposes: Williamson et al. 1988; refer to respective single ingredient monographs.
[2]References consulted for the doses: Williamson et al. 1988; refer to respective single ingredient monographs.

[3]Note: For Valerian extracts standardized to valerenic acid or sesquiterpenic acids, the quantity dried equivalent and the extract ratio must be provided.

Table 2.3. Cognitive function uses or purposes and associated daily doses for ingredients with cognitive support action

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
Helps support cognitive/brain health/function.	Acetylcarnitine	N/A	1.5-4 grams, per day
	Bacopa monnieri (Bacopa)	Standardized Extracts (Dry extract)	300 milligrams dried whole plant/herb top extract, per day, standardized to 40-55% bacosides
	Cod liver oil	Standardized fixed oil	18 years: 0.77-4 grams cod liver oil, per day And 150-1,360 milligrams EPA + DHA including at least 100 milligrams DHA, per day And 138-2,800 micrograms RAE (vitamin A), per day And 1.15-23.12 micrograms vitamin D_3, per day
			19 years and older: 0.77-4 grams cod liver oil, per day And 150-1,360 milligrams EPA + DHA including at least 100 milligrams DHA, per day And 138-3,000 micrograms RAE (Vitamin A), per day And 1.15-25 micrograms Vitamin D_3, per day

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
	L-alpha-Glycerophosphoryl choline (Choline alfoscerate)	N/A	1.2 grams, per day
	Fish oil	Standardized fixed oil	150-5,000 milligrams EPA and DHA including at least 100 milligrams DHA, per day[3]
	Phosphatidylserine	N/A	300 milligrams, per day
	Schizochytrium oil	Standardized fixed oil	200-2,000 milligrams DHA, per day
Helps (to) support memory	*Bacopa monnieri* (Bacopa)	Standardized Extracts (Dry extract)	300 milligrams dried whole plant/herb top extract, per day, standardized to 40- 55% bacosides
Traditionally used in Ayurveda for memory enhancement	*Bacopa monnieri* (Bacopa)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1-6.5 grams dried whole plant/herb top, per day
	Withania somnifera (Ashwagandha)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-6 grams dried root, per day
Helps (to) improve sustained attention.	Citicoline	N/A	250-1000 milligrams per day; not to exceed 500 milligrams per single dose
Helps (to) support cognitive health and/or brain function in older adults.		N/A	500-1000 milligrams per day; not to exceed 500 milligrams per single dose
Used in Herbal Medicine to help improve mental performance after periods of mental exertion	*Eleutherococcus senticosus* (Eleuthero)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.91-6 grams dried root/root and rhizome, per day
Helps (to) enhance cognitive function and/or memory in adults	*Ginkgo biloba* (Ginkgo)	Standardized Extracts (Dry extract)	80-240 milligrams of extract, per day (quantity crude equivalent 4-12 g of dried leaves, per day) providing at least 80 milligrams of extract per single dose and standardized to:

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
			22-27% flavonoid glycosides And 5-7% terpene lactones
(Used in Herbal Medicine to) help(s) support cognitive function and/or reduce mental fatigue (in cases of mental stress) AND/OR Helps support cognition	*Panax ginseng* (Panax ginseng)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid Extract, Decoction, Infusion)	0.5-9 grams dried root/ rootlet, per day
		Standardized Extracts (Dry extract)	200-600 milligrams of extract, per day; standardized to 4-7% total ginsenosides; Not to exceed a quantity crude equivalent of 9 grams of dried root/rootlet, per day
(Used in Herbal Medicine) (to) help(s) support cognitive function (such as mental focus and mental stamina)	*Rhodiola rosea* (Rhodiola)	Tincture	1.2-1.8 grams dried root/root and rhizome, per day
		Standardized Extracts (Dry extract)	144-680 milligrams of dried root/root and rhizome extract, per day; Not to exceed 200 milligrams per single dose and: 0.8-3% salidroside And/Or 1-6% rosavins
Helps to decrease cognitive fatigue due to physically stressful situations (e.g. extended wakefulness, exposure to cold, excessive noise).	L-Tyrosine	N/A	10-20 grams, per day; Not to exceed 10 grams per single dose

[1]References consulted for the uses or purposes: Nakazaki et al. 2021; McGlade et al. 2015, 2012; Morgan and Stevens 2010; Yurko-Mauro et al. 2010; Barbhaiya et al. 2008; Calabrese et al. 2008; Malaguanera et al. 2008; Stough et al. 2008; Raghav et al. 2006; Murthy 2004; De Jesus Moreno Moreno 2003; Roodenrys et al. 2002; API 2001; Parnetti et al. 2001; Stough et al. 2001; Thal et al. 2000; Upton 2000; Neri et al. 1995; Barbagallo et al. 1994; Pettegrewet al. 1994; Parnetti et al. 1993; Sano et al. 1992; Canal et al. 1991; Spagnoli et al. 1991.

[2]References consulted for the doses : Nakazaki et al. 2021; McGlade et al. 2015, 2012; Cotroneo et al. 2013; EFSA 2013; Jensen et al. 2010; Morgan and Stevens 2010; Quinn et al. 2010; Yurko-Mauro et al. 2010; Calabrese et al. 2008; Malaguanera et al. 2008; Mahoney et al. 2007; Bone 2003; De Jesus Moreno Moreno 2003; API 2001; Kapoor 2001; Parnetti et al. 2001; Stough et al. 2001; Thal et al. 2000; Barbagallo et al. 1994; Pettegrewet al. 1994; Parnetti et al. 1993; Sano et al. 1992; Canal et al. 1991; Spagnoli et al. 1991.

[3]For fish oil including species of Gadidae as a source material, the vitamin A and D content should be tested to ensure that the daily maximum amounts meet the Multi-Vitamin/Mineral Supplements monograph for each age group.

Table 2.4. Cognitive function uses or purposes and associated daily doses for caffeine and ingredients containing caffeine

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
Helps (temporarily) (to) promote alertness and wakefulness, and (to) enhance cognitive performance AND/OR Helps (temporarily) (to) relieve/reduce fatigue/tiredness AND/OR Helps (temporarily) (to) support/promote mental sharpness/alertness	1,3,7-Trimethylxanthine (Caffeine)	N/A	100-400 milligrams, per day and 100-200 milligrams per single dose
	Ilex paraguariensis (Yerba mate)	Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	Extract standardized to caffeine corresponding to a maximum Quantity Crude Equivalent of 6 grams dried leaf, per day; not exceeding 150 milligrams caffeine per day; and providing 100-150 milligrams caffeine per single dose
	Paullinia cupana (Guarana)	Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	Extract standardized to caffeine corresponding to a maximum Quantity Crude Equivalent of 3 grams dried seed per day and not exceeding 200 milligrams caffeine per day; and providing 100-200 milligrams caffeine per single dose
Used in Herbal Medicine to help temporarily promote alertness and wakefulness, and to enhance cognitive performance	*Ilex paraguariensis* (Yerba mate)	Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	Extract standardized to caffeine corresponding to a Quantity Crude Equivalent of 3-6 grams dried leaf, per day and not exceeding 150 milligrams caffeine per day
		Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	Extract standardized to caffeine corresponding to a Quantity Crude Equivalent of 2-6 grams dried leaf, per day and not exceeding 150 milligrams caffeine per day
	Paullinia cupana (Guarana)	Standardized Ethanolic Extracts (Dry extract,	Extract standardized to caffeine corresponding to

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
		Tincture, Fluid extract)	a Quantity Crude Equivalent of 1-3 grams dried seed, per day and not exceeding 200 milligrams caffeine per day

[1]References consulted for the uses or purposes: EMA 2013; EMA 2010; ESCOP 2009; Bradley 2006; Christopher et al. 2005; Kennedy al. 2004; Taylor 2003; Barnes et al. 2002; Kamimori et al. 2000; Zwyghuizen- Doorenbos et al. 1990.
[2]References consulted for the doses: Health Canada 2025; EMA 2013; Health Canada 2012; EMA 2010; ESCOP 2009; Bradley 2006; Taylor 2003.

Table 2.5. Cognitive function uses or purposes and associated daily doses for ingredients with relaxation action

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
Helps (to) temporarily promote relaxation	4-Aminobutanoic acid (GABA)	N/A	50-3,000 milligrams, per day; Not to exceed 750 milligrams per single dose
	L-Theanine	N/A	200-250 milligrams, per day

[1]References consulted for the uses or purposes: Kanehira et al. 2011; Abdou et al. 2006.
[2]References consulted for the doses: Kanehira et al. 2011; Powers et al. 2007; Yamakoshi et al. 2006.

Table 2.6. Cognitive function uses or purposes and associated daily doses for ingredients with adaptogen action

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
Used in Herbal Medicine as an adaptogen to help increase energy and resistance to stress over time (e.g. in case of mental and physical fatigue related to stress)	*Asparagus racemosus* (Shatavari)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-6 grams dried root, per day
	Astragalus membranaceus (Astragalus)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-4.8 grams dried root, per day
	Eleutherococcus senticosus (Eleuthero)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.91-6 grams dried root/ root and rhizome, per day
	Ganoderma lucidum (Reishi)	Dry, Powdered, Non-Standardized Ethanolic	1.5-6 grams dried cultured mycelium/

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
		Extracts (Dry extract, Tincture, Fluid extract)	fruiting body/ mycelium, per day
		Decoction, Decoction concentrate	3-15 grams dried cultured mycelium/ fruiting body/ mycelium, per day
		Decoction Standardized, Decoction concentrate Standardized	3-15 grams dried cultured mycelium/ fruiting body/ mycelium, per day and not to exceed 40 % polysaccharides
	Glycyrrhiza glabra (Licorice)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.6-6 grams dried root/ root and stolon, per day
	Ocimum tenuiflorum (Holy basil)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-3 grams dried leaf, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	4.2-28 grams dried leaf, per day
	Panax ginseng (Panax ginseng)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid Extract, Decoction, Infusion)	0.5-9 grams dried root/ rootlet, per day
		Standardized Extracts (Dry extract)	200-600 milligrams of extract, per day; standardized to 4-7% total ginsenosides; Not to exceed a quantity crude equivalent of 9 grams dried root/rootlet, per day
	Panax quinquefolius (Canadian/American ginseng)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1-3 grams dried root, per day
		Non- Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	6-9 grams dried root, per day; Not to exceed 3 grams per single dose
	Rhodiola rosea (Rhodiola)	Non-Standardized Ethanolic Extracts (Dry extract)	144-400 milligrams of extract and a quantity crude equivalent of 216-

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
			2,000 milligrams dried root/root and rhizome, per day; Not to exceed 200 milligrams of extract and a QCE of 1 gram dried root/root and rhizome, per single dose
		Tincture	1.2-1.8 grams dried root/root and rhizome, per day
		Standardized Extracts (Dry extract)	144-680 milligrams of dried root/root and rhizome extract, per day; Not to exceed 200 milligrams per single dose and: 0.8 - 3% salidroside And/Or 1 - 6% rosavins
	Schisandra chinensis (Schisandra)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1.2-6 grams dried fruit, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	1.5-6 grams dried fruit, per day
	Tinospora cordifolia (Guduchi)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.9-3 grams dried stem, per day
		Decoction, Decoction concentrate	20-30 grams dried stem, per day
	Withania somnifera (Ashwagandha)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2.5-6.5 grams dried root/whole plant, per day
(Used in Herbal Medicine to) help(s) (to) temporarily relieve symptoms of stress (such as mental fatigue and sensation of weakness)	*Rhodiola rosea* (Rhodiola)	Non-Standardized Ethanolic Extracts (Dry extract)	144-400 milligrams of extract and a Quantity Crude Equivalent (QCE) of 216-2,000 milligrams dried root/root and rhizome, per day; Not to exceed 200 milligrams of extract and a QCE 1 gram of dried root/root and rhizome, per single

Uses or Purposes[1]	Medicinal Ingredients	Methods of preparation	Doses/day[2]
			dose
		Tincture	1.2-1.8 grams dried root/root and rhizome, per day
		Standardized Extracts (Dry extract)	144-680 milligrams of dried root/root and rhizome extract, per day; Not to exceed 200 milligrams per single dose and: 0.8 - 3% salidroside And/Or 1 - 6% rosavins
Traditionally used in Ayurveda as Rasayana (rejuvenative tonic)	*Asparagus racemosus* (Shatavari)	Dry, Powdered, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	3-6 grams dried root, per day
	Withania somnifera (Ashwagandha)	Dry, Powdered, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-6 grams dried root, per day

[1]References consulted for the uses or purposes: Upton 2012; Winston and Maimes 2007; Mills and Bone 2005; API 2004; WHO 2004; Bone 2003; Hoffman 2003; Thomsen 2002; Williamson 2002; API 2001; Blumenthal et al. 2000; Upton 2000, 1999; WHO 1999; Bradley 1992.
[2]References consulted for the doses: Upton 2012; Winston and Maimes 2007; Mills and Bone 2005; API 2004, 2001; WHO 2004; Bone 2003; Hoffman 2003; Thomsen 2002; Williamson 2002; Kapoor 2001; Blumenthal et al. 2000; Upton 1999; WHO 1999; Bradley 1992.

Table 2.7. Maximum daily doses for complementary ingredients with no associated recommended use

Medicinal Ingredients	Methods of preparation	Doses/day[1]
Huperzia serrata (Toothed club-moss)	Standardized extracts (Dry extract)	Up to 20 milligrams extract standardized to huperzine A, per day; Not to exceed 1% huperzine A potency
Huperzine A	N/A	Up to 200 micrograms, per day
Theacrine	N/A	Up to 300 milligrams, per day
Theobromine	N/A	Up to 850 milligrams, per day

[1]References consulted for the doses: Clewell et al. 2016; Taylor et al. 2016; Neufingerl et al. 2013; Ma et al. 2007; Sun et al. 1999.

Direction(s) for use

See Table 5 below.

Combination rules and restrictions

All medicinal ingredients included in this monograph may be combined across all groups, with the following restrictions:

Use or Purpose Restrictions

- A use or purpose statement is only acceptable if at least one medicinal ingredient associated with that statement is present at a dose at or above the minimum daily dose listed in Tables 2.1 to 2.6.
- Medicinal ingredients which do not meet the minimum daily dose for a use or purpose statement will be considered as acceptable complementary medicinal ingredients in product formulations.
- For multi-ingredient products making at least one claim based on traditional use:
    - To prevent the product from being represented as a "traditional medicine," any indicated traditional use claim must refer to the specific medicinal ingredient(s) and recognized traditional system of medicine from which the claim originates when 1) both traditional and modern claims are present or 2) when claims originate from multiple systems of traditional medicine (e.g. German chamomile is traditionally used in Herbal Medicine to help relieve restlessness and/or nervousness. Ashwagandha is traditionally used in Ayurveda to balance aggravated Vata).
    - When ALL of the medicinal ingredients (MIs) in the product are used within the SAME identified system of traditional medicine AND the product makes ONLY traditional claims, listing of MIs in the traditional claim(s) is not required.

Rules for sedative (soporific) ingredients (table 2.2)

If sedative ingredients (table 2.2) are combined, the sum of the percentages of the maximum daily reference dose must not exceed 120%, for all sedative ingredients in the product (including sedative ingredients supported by other NNHPD monographs such as melatonin). Note that no single ingredient can exceed 100% of its maximum daily reference dose. Please see Table 3 below for a calculation example.

Table 3. Combination Table to assess Safety of Sedative/Soporific Ingredients

Additive Indication	e.g. Used in Herbal Medicine as a sleep aid		
Medicinal Ingredients	Maximum Daily Recommended Dose on PLA form	Maximum Daily Monograph Reference Dose	Percentage of the Maximum Daily Reference Dose (%)
Eschscholzia californica (California-poppy)	0.5 g	3 g	0.5/3 = 16.67%
Humulus lupulus (Hops)	4 g	6 g	4/6 = 66.66%

Passiflora incarnata (Passionflower)	0.5 g	8 g	0.5/8 = 6.25%
Sum of Percentages			89.6%

The calculations are performed as follows:

- Percentage of the Maximum Daily Reference Dose = [(Maximum Daily Recommended Dose on PLA form) / (Maximum Daily Monograph Reference Dose)] x 100%

Safety assessment - Sum of Percentages:

- In the example above, the sum of Percentages of the Maximum Daily Reference Dose is 89.6%, which is less than 120%. Safety of the combination of ingredients is therefore supported by the monograph.

Rules for Caffeine

- If a product contains caffeine from any source, it cannot contain a sedative at a therapeutic dose (table 2.2) and nervine/sedative/relaxation claims (tables 2.1, 2.2 & 2.5) are not permitted.
- Products containing a total amount of caffeine per day that meets the minimum therapeutic dose (100 mg/day) must indicate a use or purpose associated with caffeine.
- Products containing caffeine either synthetic, isolated or from plant materials must not:
  - indicate any uses or purpose related to healthy blood pressure or cardiovascular health at any dose (except if supported by a monograph for a medicinal ingredient providing caffeine such as green coffee bean extract).
  - indicate any uses or purpose related to the maintenance/support of good/general health at a daily dose of 40 mg or more total caffeine from all sources.
- The maximum amount of total caffeine permitted from all ingredients in the product is 400 mg/day, and 200 mg per single dose.
- If the total amount of caffeine provided by the combination of ingredients in the product (e.g. Yerba mate and Guarana) is equal to or higher than 40 mg per day, risk statements from the NNHPD Caffeine Monograph are required. Please see Table 5 below.
- Additional synthetic caffeine added to Guarana and/or Yerba mate extracts must be represented as a separate medicinal ingredient.
- When caffeine (from any source) is combined with theacrine and/or theobromine, the sum of the percentages of the maximum daily/single reference dose must not exceed 120% for these ingredients. Note that no single ingredient can exceed 100% of its maximum daily/single reference dose. Please see table 4 below.

Table 4. Combination Table to assess safety of ingredients with a caution for cardiovascular and/or blood pressure conditions.

Additive Effect	Ingredients which may have an impact on heart rate and/or blood pressure		
Medicinal Ingredients	Maximum Daily/ Single Recommended Dose on PLA form	Maximum Daily/ Single Monograph Reference Dose	Percentage of the Maximum Daily/ Single Reference Dose (%)
Caffeine	100 mg	200 mg per single dose/400 mg per day	100/200 = 50% (single dose) 100/400 = 25% (day)

Theacrine	120 mg	300 mg	120/300 = 40%
Theobromine	50 mg	850 mg	50/850 = 5.9%
Sum of Percentages			95.9% per single dose/ 70.9% per day

See table 3 above for an example of calculations. In this example, the sum of Percentages of the Maximum Monograph Reference Single Dose is 95.9%, which is less than 120%. Safety of the combination of ingredients is therefore supported by the monograph.

Rules for Huperzine A

When combining *Huperzia serrata* extract and Huperzine A (isolate or synthetic), the total quantity of Huperzine A provided by the product cannot exceed 200 micrograms per day.

Rules for Acetylcarnitine (Restrictions when this monograph is combined with other monographs)

When combining Acetylcarnitine with L-Carnitine, the total quantity of these ingredients cannot exceed 4 grams per day and 2 grams per single dose.

Duration(s) of use

See Table 5 below.

Risk information

Consult Table 5 for appropriate statements related to each medicinal ingredient. The medicinal ingredients in Table 5 are associated with the required numbered statements below.

1. As per the respective NNHPD monograph.

Duration(s) of Use

2. *Products providing Huperzia serrata, Huperzine A, 300 mg or more GABA per day, or over 150 mg Theobromine per day:* Ask a health care practitioner/health care provider/health care professional/doctor/physician for use beyond 4 weeks.
3. *Products providing 101 to 300 mg/day Theacrine:* Ask a health care practitioner/health care provider/health care professional/doctor/physician for use beyond 8 weeks.

Caution(s) and warning(s)

4. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician if** symptoms persist or worsen.
5. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you are pregnant or breastfeeding.
6. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you are pregnant.
7. **Ask a health care practitioner/health care provider/health care professional/doctor/**

physician before use if you are breastfeeding.

8. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you have a urinary tract disorder and/or kidney disease.
9. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you have kidney disease and/or a seizure disorder.
10. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you have high blood pressure or glaucoma.
11. *Products providing Huperzia serrata, huperzine A, or over 150 mg/day theobromine*: **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you have a blood pressure or cardiovascular disorder.
12. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you are taking medications which affect acetylcholine levels (cholinergic or anticholinergic drugs).
13. **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you are taking dopaminergic or cholinergic drugs.
14. *Products making a sustained attention claim*: **Ask a health care practitioner/health care provider/health care professional/doctor/ physician before use if** you have an attention deficit disorder with or without hyperactivity (ADD or ADHD).
15. **When using this product** exercise caution if you drive or use machinery as you may experience drowsiness.
16. *Products providing 300 mg or more GABA per day*: **When using this product** avoid taking with alcohol.

Contraindication(s)

17. **Do not use** if you are pregnant or breastfeeding.
18. **Do not use** if you are pregnant.
19. **Do not use** if you have gastrointestinal irritation.

Known adverse reaction(s)

20. **Stop use and ask a health care practitioner/health care provider/health care professional/doctor/physician if** you experience dizziness, unusual muscle cramping, agitation, gastrointestinal symptoms such as nausea, vomiting, diarrhea or excessive salivation.
21. **Stop use and ask a health care practitioner/health care provider/health care professional/doctor/physician if** hypersensitivity/allergy occurs.
22. **Stop use if** you experience severe stomach and/or intestinal irritation.
23. **When using this product** you may experience gastrointestinal discomfort/disturbances.
24. **When using this product** you may experience headaches or gastrointestinal discomfort/disturbances.
25. **When using this product** (a) diuretic effect may occur.

Table 5. Risk information, durations of use, and directions for use associated with medicinal ingredients

Medicinal Ingredients	Risk Information	Durations of Use	Directions for use
1,3,7-Trimethylxanthine (Caffeine)	1		1
4-Aminobutanoic acid (GABA)	5,16	2	

Medicinal Ingredients	Risk Information	Durations of Use	Directions for use
Acetyl-L-Carnitine (Acetylcarnitine)	5,9,23		
Anemone pulsatilla (Pasqueflower)	4,8,17,19,22		
Asparagus racemosus (Shatavari)	6		
Astragalus membranaceus (Astragalus)	1		
Avena sativa (Oat)	4		
Bacopa monnieri (Bacopa)	5,23		
Citicoline	5,13,14,24		
Cod liver oil	1		
Eleutherococcus senticosus (Eleuthero)	1	1	
Eschscholzia californica (California-poppy)	1		1
Fish oil	1		
Ganoderma lucidum (Reishi)	1		1
Ginkgo biloba (Ginkgo)	1	1	
Glycyrrhiza glabra (Licorice)	1	1	
Humulus lupulus (Hops)	1		1
Huperzia serrata; Huperzine A	11,12,17,20	2	
Hypericum perforatum (St. John's wort)	1	1	
Ilex paraguariensis (Yerba mate)	5,10,21,25		
L-5-Hydroxytryptophan (L-5-HTP)	1	1	1
L-alpha-Glycerophosphorylcholine (Choline alfoscerate)	5		
L-Tyrosine	1	1	1
Matricaria chamomilla (German chamomile)	1		
Melissa officinalis (Lemon balm)	1		
Nepeta cataria (Catnip)	1		
Ocimum tenuiflorum (Holy basil)	1		
Panax ginseng (Asian ginseng)	1	1	
Panax quinquefolius (Canadian/American ginseng)	1		
Passiflora incarnata (Passionflower)	1		1
Paullinia cupana (Guarana)	5,10,21,25		
Phosphatidylserine	1		
Rhodiola rosea (Rhodiola)	1		
Schisandra chinensis (Schisandra)	7,18		
Scutellaria lateriflora (Skullcap)	1		
Stachys officinalis (Wood Betony)	4,5,15		
Theacrine	5,10	3	
Theobromine	5,11,23	2	
Tilia cordata (Small-leaf linden)	1		
Tilia platyphyllos (Large-leaf linden)	1		
Tilia x europaea (European linden)	1		
Tinospora cordifolia (Guduchi)	5		

Medicinal Ingredients	Risk Information	Durations of Use	Directions for use
Turnera diffusa (Damiana)	4,7,18		
Valeriana officinalis (Valerian)	1		1
Withania somnifera (Ashwagandha)	1		
Combination of ingredients resulting in a total caffeine content of 40 mg/day or more (e.g. Yerba mate and Guarana extracts)	as per the caffeine monograph		as per the caffeine monograph

References: Nakazaki et al. 2021; Clewell et al. 2016; Taylor et al. 2016; Kuhman et al. 2015, McGlade et al. 2015, Morasch et al. 2015, Baggott et al. 2013, Cotroneo et al. 2013; EFSA 2013; EMA 2013; Gardner and McGuffin 2013, Neufingerl et al. 2013, Yang et al. 2013, McGlade et al. 2012, Fiebich et al. 2011; AMR 2010; Morgan and Stevens 2010; Okun et al. 2010, Van den Bogaard et al. 2010; ESCOP 2009; Wang et al. 2009; Calabrese et al. 2008; CPS 2008; Li et al. 2008, Cornelis and El-Sohemy 2007; Powers et al. 2007; Bain et al.2006; Bradley 2006; Bui et al. 2006; Mills et al. 2006; Shils et al. 2006; Turner et al. 2006; Bouchard et al. 2005; Chandrasekaran et al. 2005; Haller et al. 2005; Noordzij et al. 2005; Nathan et al. 2004; Bone 2003; Zangara 2003; Avisar et al. 2002; Barnes et al. 2002; Berardi et al. 2002; Thomsen 2002; Brinker 2001; Nathan et al. 2001; Stough et al. 2001; Arya et al. 2000; Pepping 2000; Vahedi et al. 2000; Jee et al. 1999; Sun et al. 1999; Mester et al. 1995; Xu et al. 1995, Bradley 1992; Zimmerman 1992; Creighton and Stanton 1990; Rai et al. 1990; Jefferson 1988.

Non-medicinal ingredients

Must be chosen from the current Natural Health Products Ingredients Database (NHPID) and must meet the limitations outlined in that database.

Storage conditions

Must be established in accordance with the requirements described in the *Natural Health Products Regulations*.

Products containing Cod liver oil, Fish oil or Schizochytrium oil

(except when encapsulated)

Refrigerate after opening (Senanayake and Fichtali 2006; Wille and Gonus 1989).

(information for industry; not for labelling)

To be packaged in airtight container, protected from light (Ph.Eur. 2023; USP-NF 2023).

Specifications

- The finished product specifications must be established in accordance with the requirements described in the Natural and Non-prescription Health Products Directorate (NNHPD) Quality of Natural Health Products Guide.

- The medicinal ingredient must comply with the requirements outlined in the NHPID.
- For the following ingredients, please see the respective NNHPD monograph for additional quality requirements: Astragalus, American ginseng, Cod liver oil, Eleuthero, Fish oil, German chamomile-Oral, Ginkgo biloba, Hops, Licorice, Panax ginseng, St John's wort, L- Tyrosine, L-Theanine, Valerian.

EXAMPLES OF PRODUCT FACTS:

Consult the Guidance Document, Labelling of Natural Health Products for more details.

Product Facts
Medicinal ingredients in each capsule *Eschscholzia californica* (California-poppy – herb top) XX mg *Melissa officinalis* (Lemon balm – herb top) XX mg L-Theanine (*Camellia sinensis* – leaf) XX mg *Passiflora incarnata* (Passionflower) X:1 extract XX mg Equivalent to YY g of dried herb top
Uses • Lemon balm is traditionally used in Herbal Medicine to help relieve restlessness and nervousness which helps to promote sleep. • Used in Herbal Medicine as a sleep aid. • Helps to temporarily promote relaxation.
Warnings
If applicable[1]: Allergens: food allergen, gluten (gluten source), sulphites **Contains aspartame**
Do not use if you are pregnant.
Ask a health care practitioner before use if you are breastfeeding.
When using this product • avoid taking with alcohol or products that cause drowsiness or with analgesic properties • exercise caution if you drive or use machinery as you may experience drowsiness.
Stop use if allergy occurs.
Ask a health care practitioner if • sleeplessness persists for more than 4 weeks (chronic insomnia) • symptoms persist or worsen.
Directions Adults 18 years and older: • Take X capsule(s), X time(s) a day • Take 1 hour before bedtime, as needed.
Other information (Add storage information)
Non-medicinal ingredients List all NMIs
Questions? (Call) 1-XXX-XXX-XXXX

[1]This section can be removed from the table if the product contains no allergen or aspartame.

Product Facts	
Medicinal ingredients in each capsule	
Panax quinquefolius (Canadian ginseng – root)	XX mg
Bacopa monnieri (Bacopa) – herb top extract	XX mg
Providing 50% bacosides	
Fish oil (Atlantic salmon, sardine, tuna – whole)	XX mg
Providing • Eicosapentaenoic acid (EPA) YY mg • Docosahexaenoic acid (DHA) ZZ mg	
Uses • Helps support cognitive function. • Helps support memory. • Used in Herbal Medicine as an adaptogen to help increase energy and resistance to stress over time.	
Warnings	
If applicable[1]: Allergens: food allergen, gluten (gluten source), sulphites **Contains aspartame**	
Ask a health care practitioner before use if • you are pregnant or breastfeeding • you are taking blood thinners or digoxin • you have diabetes.	
When using this product you may experience gastrointestinal discomfort.	
Ask a health care practitioner if symptoms persist or worsen.	
Directions Adults 18 years and older: • Take X capsule(s), X time(s) a day.	
Other information (Add storage information)	
Non-medicinal ingredients List all NMIs	
Questions? (Call) 1-XXX-XXX-XXXX	

[1]This section can be removed from the table if the product contains no allergen or aspartame.

References cited

Abdou AM, Higashiguchi S, Horie K, Kim M, Hatta H, Yokogoshi H. Relaxation and immunity enhancement effects of gamma-aminobutyric acid (GABA) administration in humans. Biofactors 2006;26(3):201-208.

AMR 2010: Alternative Medicine Review (AMR). Acetyl-L-Carnitine Monograph. Alternative Medicine Review 2010;15(1):76-83.

Anghelescu IG, Kohnen R, Szegedi A, Klement S, Kieser M. Comparisons of Hypericum extract WS 5570 and paroxetine in ongoing treatment after recovery from an episode of moderate to severe depression: results from a randomized multicenter study. Pharmacopsychiatry 2006; 39(6):213-219.

API 2001: The Ayurvedic Pharmacopoeia of India, Part I, Volume I and II, 1st edition. New Delhi (India): Government of India, Ministry of Health and Family Welfare, Department of Indian Systems of Medicine & Homoeopathy; 2001.

API 2004: The Ayurvedic Pharmacopoeia of India, Part 1, Volume IV. Delhi (IN): The Controller

of Publications; 2004.

Arya LA, Myers DL, Jackson ND. Dietary caffeine intake and the risk for detrusor instability: a case-control study. Obstetrics and Gynecology 2000;96(1):85-89.

Avisar R, Avisar E, Weinberger D. Effect of coffee consumption on intraocular pressure. The Annals of Pharmacotherapy 2002;36(6):992-995.

Baggott MJ, Childs E, Hart AB, de Bruin E, Palmer AA, Wilkinson JE, de Wit H. Psychopharmacology of theobromine in healthy volunteers. Psychopharmacology 2013;228(1): 109-118.

Bain MA, Faull R, Fornasini G. Accumulation of trimethylamine and trimethylamine-N-oxide in end-stage renal disease patients undergoing haemodialysis. Molecular Genetics and Metabolism 2004;81:263-272.

Barbagallo SG, Barbagallo M, Giordano M, Meli M, Panzarasa R. Alpha-glycerophosphocholine in mental recovery of cerebral ischemic attacks. An Italian multicenter clinical trial. Annals of the New York Academy of Science 1994;717:253-269.

Barbhaiya C, Desai R, Saxena V, Pravina K, Wasim P, Geetharani P, Allan J, Venkateshwarlu K, Amit A. Efficacy and tolerability of bacomind® on memory improvement in elderly participants- A double blind placebo controlled study. Journal of Pharmacology and Toxicology 2008;3(6):425-434.

Barnes J, Anderson LA, Philipson JD. Herbal Medicines: A Guide for Healthcare Professionals, 2nd edition. London (GB): The Pharmaceutical Press; 2002.

Berardi RR, DeSimone EM, Newton GD, Oszko MA, Popovich NG, Rollins CJ, Shimp LA, Tietze KJ, editors. Handbook of Non-prescription Drugs: An Interactive Approach to Self-Care, 13th edition. Washington (DC): American Pharmaceutical Association; 2002.

BHP 1983: British Herbal Pharmacopoeia. Cowling (GB): British Herbal Medical Association; 1983.

Blumenthal M, Goldberg A, Brinckmann J. Herbal Medicine: Expanded Commission E Monographs. American Botanical Council; 2000.

Bone K. A clinical guide to blending liquid herbs: Herbal formulations for the individual patient. St. Louis (MI): Churchill Livingstone; 2003.

Bouchard NC, Howland MA, Greller HA, Hoffman RS, Nelson LS. Ischemic stroke associated with use of an ephedra-free dietary supplement containing synephrine. Mayo Clinic Proceeding 2005; 80(4):541-545.

BPC 1911: British Pharmaceutical Codex. Council of the Pharmaceutical Society of Great Britain; 1911.

Bradley PR, editor. British Herbal Compendium: A Handbook of Scientific Information on Widely Used Plant Drugs, Volume 1. Bournemouth (GB): British Herbal Medicine Association; 1992.

Bradley PR, editor. British Herbal Compendium: A Handbook of Scientific Information on Widely Used Plant Drugs, Volume 2. Bournemouth (GB): British Herbal Medicine Association; 2006.

Brinker F. Herb Contraindications and Drug Interactions, 3rd edition. Sandy (OR): Eclectic Medical Publications; 2001.

Brinker F. 2010. Online Updates and Additions to Herb Contraindications and Drug Interactions, 3rd edition. Sandy (OR): Eclectic Medical Publications; 2010. [Accessed 2014-03-04]. Available from: http://www.eclecticherb.com/emp/updatesHCDI.html.

Bui LT, Nguyen DT, Ambrose PJ. Blood pressure and heart rate effects following a single dose of bitter orange. The Annals of Pharmacotherapy 2006;40(1):53-57.

Calabrese C, Gregory WL, Leo M, Kraemer D, Bone K, and Oken B. Effects of a standardized Bacopa monnieri extract on cognitive performance, anxiety, and depression in the elderly: A randomized, double-blind, placebo-controlled trial. The Journal of Alternative and Complimentary Medicine 2008;14(6):707-713.

Canal N, Franceschi M, Alberoni M, Castiglioni C, De Moliner P, Longoni A. Effects of L- alpha-glyceryl-phosphorylcholine on amnesia caused by scopolamine. International Journal of Clinical Pharmacology. Therapy and Toxicology 1991;29(3):103-107.

Chandrasekaran S, Rochtchina E, Mitchell P. Effects of caffeine on intraocular pressure: the Blue Mountains Eye Study. Journal of Glaucoma 2005;14(6):504-507.

Christopher G, Sutherland D, Smith A. Effects of caffeine in non-withdrawn volunteers. Human Psychopharmacology 2005;20(1):47-53.

Clewell A, Hirka G, Glavits R, Palmer PA, Endres JR, Murbach TS, Marx T, Szakonyine IP. A 90-day oral toxicological evaluation of the methylurate purine alkaloid theacrine. Journal of Toxicology 2016: https://doi.org/10.1155/2016/6206859.

CNF 2023: Canadian Nutrient File (CNF). Nutrition & Healthy Eating, Food and Nutrition, Health Canada. [Accessed 2023 October 27]. Available from: http://webprod3.hc-sc.gc.ca/cnf- fce/index-eng.jsp.

Cornelis MC, El-Sohemy A. Coffee, caffeine, and coronary heart disease. Current Opinion in Lipidology 2007;18(1):13-19.

Cotroneo AM, Castagna A, Putignano S, Lacava R, Fanto F, Monteleone F, Rocca F, Malara A, Gareri P. Effectiveness and safety of citicoline in mild vascular cognitive impairment: the IDEALE study. Clinical interventions in aging 2013;8:131-137.

CPS 2008: Compendium of Pharmaceuticals and Specialties: The Canadian Drug Reference for Health Professionals. Ottawa (ON): Canadian Pharmacists Association; 2008.

Creighton SM, Stanton SL. Caffeine: does it affect your bladder? British Journal of Urology 1990;66(6):613-614.

De Jesus Moreno Moreno M. Cognitive improvement in mild to moderate Alzheimer's dementia after treatment with the acetylcholine precursor choline alfoscerate: A multicenter, double-blind, randomized, placebo-controlled trial. Clinical Therapeutics 2003;25(1):178-193.

EFSA 2013: European Food Safety Authority. Scientific Opinion on the safety of "citicoline" as a Novel Food ingredient. EFSA Journal 2013;11(10):3421-3443.

Ellingwood F. American Materia Medica, Therapeutics and Pharmacognosy. Sandy (OR): Eclectic Medical Publications; 1983 [Reprint of 1919 original].

EMA 2008: European Medicines Agency. Community herbal monograph on Avena sativa L., herba. London (UK): Committee on herbal medicinal products (HMPC); 2008. [Accessed 2024 February 8]. Available from: https://www.ema.europa.eu/en/documents/herbal-monograph/final-community-herbal-monograph-avena-sativa-l-herba_en.pdf.

EMA 2010: European Medicines Agency. Community herbal monograph on Ilex paraguariensis St. Hilaire, folium. London (UK): Committee on Herbal Medicinal Products (HMPC); 2009. [Accessed 2023 October 27]. Available from: https://www.ema.europa.eu/en/documents/herbal-monograph/final-community-herbal-monograph-ilex-paraguariensis-st-hil-folium-first-version_en.pdf.

EMA 2013: European Medicines Agency. Community herbal monograph on Paullinia cupana Kunth ex H.B.K. var. sorbilis (Mart.) Ducke, semen. London (UK): Committee on Herbal Medicinal Products (HMPC); 2013. [Accessed 2023 October 27]. Available from: https://www.ema.europa.eu/en/documents/herbal-monograph/final-community-herbal-monograph-paullinia-cupana-kunth-ex-hbk-var-sorbilis-mart-ducke-semen-first-version_en.pdf.

ESCOP 2009: European Scientific Cooperative on Phytotherapy. ESCOP Monographs: The Scientific Foundation for Herbal Medicinal Products, 2nd edition, Supplement 2009. Exeter (GB): European Scientific Cooperative on Phytotherapy in collaboration with Thieme.

Fellows LE, Bell EA. 5-hydroxy-L-tryptophan, 5-hydroxytryptamine and L-tryptophan-5hydroxylase in Griffonia simplicifolia. Phytochemistry 1970;9(11):2389-2396.

Felter HW, Lloyd JU. King's American Dispensatory, Volume 1, 18th edition. Sandy (OR): Eclectic Medical Publications; 1983 [Reprint of 1898 original].

Fiebich BL, Knorle R, Appel K, Kammler T, Weiss G. Pharmacological studies in an herbal drug combination of St. John's Wort (Hypericum perforatum) and passion flower (Passiflora incarnata): In vitro and in vivo evidence of synergy between Hypericum and Passiflora in antidepressant pharmacological models 2011;82:474-480.

Gardner Z and McGuffin M, editors. American Herbal Products Association's Botanical Safety Handbook. 2nd edition. Boca Raton (FL): CRC Press; 2013.

Grieve M. A Modern Herbal, Volume 1. New York (NY): Dover Publications; 1971 [Reprint of 1931 Harcourt, Brace & Company publication].

Haller CA, Benowitz NL, Jacob P. Hemodynamic effects of ephedra-free weight-loss supplements in humans. The American Journal of Medicine 2005;118(9):998-1003.

Health Canada 2025. Caffeine monograph. Natural and Non-Prescription Health Products Directorate. Ottawa (ON). [Accessed 2025 July 7]. Available from: http://webprod.hc-sc.gc.ca/nhpid-bdipsn/atReq.do?atid=caffeine.cafeine&lang=eng

Health Canada 2012. Caffeine in foods. Health Canada. [Accessed 2019-02-14]. Available from: https://www.canada.ca/en/health-canada/services/food-nutrition/food-safety/food-additives/caffeine-foods/foods.html

Hoffmann D. Medical Herbalism: The Science and Practice of Herbal Medicine. Rochester (VT): Healing Arts Press; 2003.

Jee SH, He J, Whelton PK, Suh II, Klag MJ. The effect of chronic coffee drinking on blood pressure: a meta-analysis of controlled clinical trials. Hypertension 1999;33(2):647-652.

Jefferson JW. Lithium tremor and caffeine intake: two cases of drinking less and shaking more. Journal of Clinical Psychiatry 1988;49(2):72-73.

Jensen CL Voigt RG, Llorente AM, Peters SU, Prager TC, Zou YL, Rozelle JC, Turchich, MR, Frayley JK, Anerson RE, Heird WC. Effects of early maternal docosahexaenoic acid intake on neuropsychological status and visual acuity at five years of age of breast-fed term infants. The Journal of Pediatrics 2010;125:900-905.

Kamimori H, Penetar DM, Headley DB, Thorne DR, Otterstetter R, Belenky G. Effect of three caffeine doses on plasma catecholamines and alertness during prolonged wakefulness. European Journal of Clinical Pharmacology 2000;56(8):537-544.

Kanehira T, Nakamura Y, Nakamura K, Horie K, Horie N, Furugori K, Sauchi Y, Yokogoshi H. Relieving Occupational Fatigue by Consumption of a Beverage Containing gamma-Amino Butyric Acid. Journal of Nutritional Science and Vitaminology 2011;57(1):9-15.

Kapoor LD. Handbook of Ayurvedic Medicinal Plants: Herbal Reference Library. Boca Raton (FL): CRC Press; 2001.

Kennedy DO, Haskell CF, Wesnes KA, Scholey AB (2004). Improved cognitive performance in human volunteers following administration of guarana (Paullinia cupana) extract: comparison and interaction with Panax ginseng. Pharmacology, Biochemistry, and Behaviour 2004;79(3):401-411.

Kihlman BA. 1,3,7,9-Tetramethyluric acid – A chromosome-damaging agent occurring as a natural metabolite in certain caffeine-producing plants. Mutation Research 1977;39:297-316.

Kuhman DJ, Joyner KJ, Bloomer RJ. Cognitive performance and mood following ingestion of a theacrine-containing dietary supplement, caffeine, or placebo by young men and women. Nutrients 2015;7:9618-9632.

Lemaire PA, Adosraku RK. An HPLC method for the direct assay of the serotonin precursor, 5hydroxytrophan, in seeds of Griffonia simplicifolia. Phytochemical Analysis 2002;13(6):333-

337.

Li et al. Huperzine A for Alzheimer's disease. Cochrane Database Syst. Rev. 2008;16(2):CD005592

Ma X, Tan C, Zhu D, Gang DR, Xiao P. Huperzine A from Huperzia species – An ethnopharmacological review. Journal of ethnopharmacology 2007;113(1):15-34.

Mahoney CR, Castellani J, Kramer FM, Young A, Lieberman HR. Tyrosine supplementation mitigates working memory decrements during cold exposure. Physiology and Behavior 2007;92(4):575-582.

Malaguarnera M, Gargate, MP, Cristaldi E, Colonna V, Messano M, Koverech A, Neri S, Vacante M, Cammalleri L, Motta, M. Acetyl L-carnitine (ALC) treatment in elderly patients with fatigue. Archives of Gerontology and Geriatrics 2008;46:181-190.

Martinez-Pinilla E, Onatibia-Astibia A, Franco R. The relevance of theobromine for the beneficial effects of cocoa consumption. Frontiers in Pharmacology 2015;6:30.

McGlade E, Agoston AM, DiMuzio J, Kizaki, M, Nakazaki, E, Kamiya T, Yurgelun-Todd D. The Effect of Citicoline Supplementation on Motor Speed and Attention in Adolescent Males. Journal of attention disorders 2015;23(2):121-134.

McGlade E, Locatelli A, Hardy J, Kamiya T, Morita M, Morishita K, Sugimura Y, Yurgelun-Todd D. Improved attentional performance following citicoline administration in healthy adult women. Food and Nutrition Sciences 2012;3:769-773.

Mester R, Toren P, Mizrachi I, Wolmer L, Karni N, Weizman A. Caffeine withdrawal increases lithium blood levels. Biological Psychiatry 1995;37(5):348-350.

Mills E, Dugoua JJ, Perri D, Koren G. Herbal Medicines in Pregnancy and Lactation.Boca Raton (FL):Taylor and Francis Medical; 2006.

Mills S and Bone K. The Essential Guide to Herbal Safety. St. Louis (MO): Elsevier Churchill Livingstone; 2005.

Morasch KC, Aaron CL, Moon JE, Gordon RK. Physiological and neurobehavioral effects of cholinesterase inhibition in healthy adults. Physiology & Behaviour 2015;138:165-172.

Morgan and Stevens. Does Bacopa monnieri improve memory performance in older persons? Results of a randomized, placebo-controlled, double-blind trial. The Journal of Alternative and Complementary Medicine 2010;16(7):753-759.

Murthy KRS. Bhavaprakasha of Bhavmisra, Volume 1. Varanasi (IND): Chowkhamba Krishnadas Academy; 2004.

Nakazaki E, Mah E, Sanoshy K, Citrolo D, Watanabe F. Citicoline and memory function in healthy older adults: a randomized, double-blind, placebo-controlled clinical trial. The Journal of Nutrition 2023;151(8):2153-2160.

Nathan PJ, Clarke, J, Lloyd J, Hutchison CW, Downey L, Stough C. The acute effects of an extract of Bacopa monniera (Brahmi) on cognitive function in healthy normal subjects. Human Psychopharmacology 2001;16:345-351.

Nathan PJ, Tanner S, Lloyd J, Harrison B, Curran, L, Oliver C, Stough C. Effects of a combined extract of Ginkgo biloba and Bacopa monniera on cognitive function in healthy humans. Human Psychopharmacology 2004;19(2):91-96.

Neri DF, Wiegmann D, Stanny RR, Shappell SA, McCardie A, McKay DL. The effect of tyrosine on cognitive performance during extended wakefulness. Aviation, space, and environmental medicine 1995;66(4):313-319.

Neufingerl N, Zebregs YEMP, Schuring EAH, Trautwein EA. Effect of cocoa and theobromine consumption on serum HDL-cholesterol concentrations: a randomized controlled trial. The American Journal of Clinical Nutrition 2013;97:1201-1209.

NHPID 2025. Natural Health Products Ingredients Database. [Accessed 2025 July 7]. Available from: http://webprod.hc-sc.gc.ca/nhpid-bdipsn/search-rechercheReq.do

Noordzij M, Uiterwaal CS, Arends LR, Kok FJ, Grobbee DE, Geleijnse JM. Blood pressure response to chronic intake of coffee and caffeine: a meta-analysis of randomized controlled trials. Journal of Hypertension 2005;23(5):921-928.

Okun MS, Boothby LA, Bartfield RB, Doering PL. GHB: an important pharmacologic and clinical update. Journal of Pharmacy & Pharmaceutical Sciences: A Publication of the Canadian Society for Pharmaceutical Sciences, Société canadienne des sciences pharmaceutiques. 2001;4(2):167-175.

Parnetti L, Abate G, Bartorelli L, Cucinotta D, Cuzzupoli M, Maggioni M, Villardita C, Senin U. Multicentre study of l-α-glyceryl-phosphorylcholine vs ST200 among patients with probablesenile dementia of Alzheimer's type. Drugs and Aging 1993;3(2):159-164.

Parnetti L, Amenta F, and Gallai, V. Choline alphoscerate in cognitive decline and in acute cerebrovascular disease: an analysis of published clinical data. Mechanisms of Ageing and Development 2001;122:2041-2055.

Pepping J. Huperzine A. American Journal of Health-System Pharmacy 2000;57(6):530-534.

Pettegrew JA, Klunk WE, Panchalingam K, Kanfer JN, McClure RJ. Clinical and neurochemical effects of acetyl-l-carnitine in Alzheimer's disease. Neurobiology of Aging 1994;16(1):1-4.

Ph.Eur. 2023: European Pharmacopoeia, 11th edition. Strasbourg (FR): Directorate for the Quality of Medicines and HealthCare of the Council of Europe (EDQM); 2023.

Pöldinger W, Calanchini B, Schwarz W. A functional-dimensional approach to depression: serotonin deficiency as a target syndrome in a comparison of 5-hydroxytryptophan and fluvoxamine. Psychopathology 1991;24(2):53-81.

Powers ME, Yarrow JF, McCoy SC, Borst SE. Growth Hormone Isoform Responses to GABA Ingestion at Rest and after Exercise. Medicine & Science in Sports & Exercise 2007;40(1):104-110.

Quinn JF, Raman R, Thomas RG, Yurko-Mauro K, Nelson EB, Van Dyck C, Galvin JE, Emond J, Jack CR, Weiner M, Shinto L, Aisen PS. Docosahexaenoic acid supplementation and cognitive decline in Alzheimer's disease. Journal of the American Medical Association 2010;304(17):1903-1911.

Raghav S, Singh H, Dalal P, Srivastava J, Asthana O. Randomized controlled trial of standardized *Bacopa monniera* extract in age-associated memory impairment. Indian Journal of Psychiatry 2006; 48(4):238-242.

Rai G, Wright G, Scott L, Beston B, Rest J, Exton-Smith AN. Double-blind, placebo controlled study of acetyl-L-carnitine in patients with Alzheimer's dementia. Current Medical Research Opinion 1990;11:638-647.

Remington JP and Woods HC, editors. The Dispensatory of the United States of America, 20th edition; 1918.

Roodenrys S, Booth D, Bulzomi S, Phipps A, Micallef C, Smoker J. Chronic effects of Brahmi (Bacopa monnieri) on human memory. Neuropsychopharmacology 2002;27(2):279-281.

Sano M, Bell K, Cote L, Dooneief G, Lawton A, Legler L, Marder K, Naini A, Stern Y, Mayeux R. Double blind parallel design pilot study of acetyl levocarnitine in patients with Alzheimer's disease. Archive of Neurology 1992;49(11):1137-1141.

Senanayake SPJN, Fichtali J. Single-cell oils as sources of nutraceutical and specialty lipids: processing technologies and applications. In: Shahidi F, editor. Neutraceutical and speciality lipids and their co-products. Boca Raton (FL): Taylor and Francis Group; 2006.

Shils ME, Olson JA, Shike M, Ross AC, editors. Modern Nutrition in Health and Disease, 10th edition. Philadelphia (PA): Lippincott Williams and Wilkins; 2006.

Soulairac A, Lambinet H. [Effect of 5-hydroxytryptophan, a serotonin precursor, on sleep disorders]. Annales Médico-Psychologiques 1977;1(5):792-798 (in French).

Spagnoli A, Lucca U, Menasce, Bandera L, Cizza G, Forloni G, Tettamanti M, Frattura L, Tiraboschi P, Comelli M, et al. Long-term acetyl-L-carnitine treatment in Alzheimer's disease. Neurology 1991;41(11):1726-1732.

Stough C, Downey L, Lloyd J, Silber B, Redman S, Hutchison C, Wesnes K, Nathan P. Examining the nootropic effects of a special extract of Bacopa monniera on human cognitive functioning: 90 day double-blind placebo-controlled randomized trial. Phytotherapy Research 2008;22(12):1629-1634.

Stough C, Lloyd J, Clarke J, Downey L, Hutchison CW, Rodgers T, Nathan PJ. The chronic effects of an extract of Bacopa monniera (Brahmi) on cognitive function in healthy human subjects.

Psychopharmacology 2001;156(4):481-484.

Sun QQ, Xu SS, Pan JL, Guo HM, Cao WQ. Huperzine-A capsules enhance memory and learning performance in 34 pairs of matched adolescent students. Acta Pharmacologica Sinica 1999;20(7): 601-603.

Sutanto CN, Xia X, Heng CW, Tan YS, Shan Lee DP, Fam J, Kim JE. The impact of 5-hydroxytryptophan supplementation on sleep quality and gut microbiota composition in older adults: a randomized controlled trial. Clinical Nutrition 2024;43(3):593-602.

Taylor L., Mumford P., Roberts M., Hayward S., Mullins J., Urbina S., Wilborn C. Safety of TeaCrine®, a non-habituating, naturally-occurring purine alkaloid over eight weeks of continuous use. Journal of the International Society of Sports Nutrition 2016; 13(2): https://doi.org/10.1186/s12970-016-0113-3.

Taylor L. Technical data report for Yerba mate: Reprinted from Herbal Secrets of the Rainforest, 2nd Edition. Sage Press Inc.; 2003.

Thal LJ, Calvani M, Amato A, Carta AA. 1-year controlled trial of acetyl-L-carnitine in early- onset AD. Neurology 2000;55:805-810.

Thomsen M. Shatavari-Asparagus racemosus, Herbal Monograph, Phytomedicine. NSW Australia; 2002.

Tobyn G, Denham A, Vhitelegg M. The Western Herbal Tradition: 2000 years of medicinal plant knowledge. Churchill-Livingstone; 2010.

Turner EH, Loftis JM, Blackwell AD. Serotonin a la carte: supplementation with the serotonin precursor 5-hydroxytryptophan. Pharmacology & Therapeutics 2006;109(3):325-338.

Upton R, editor. American Herbal Pharmacopoeia and Therapeutic Compendium: American Ginseng Root (Panax quinquefolius L.)-Standards of Analysis, Quality Control, and Therapeutics. Santa Cruz (CA): American Herbal Pharmacopeia; 2012.

Upton R, editor. American Herbal Pharmacopoeia and Therapeutic Compendium: Ashwagandha Root (Withania somnifera) - Standards of Analysis, Quality Control, and Therapeutics. Santa Cruz (CA): American Herbal Pharmacopoeia; 2000.

Upton R, editor. American Herbal Pharmacopoeia and Therapeutic Compendium: Schisandra Berry (Schisandra chinensis)-Analytical, Quality Control, and Therapeutic Monograph. Santa Cruz (CA): American Herbal Pharmacopoeia; 1999.

USP-NF 2023: United States Pharmacopeia and the National Formulary. Rockville (MD): The United States Pharmacopeial Convention; 2023.

Vahedi K, Domingo V, Amarenco P, Bousser MG. Ischaemic stroke in a sportsman who consumed MaHuang extract and creatine monohydrate for body building. Journal of Neurology, Neurosurgery and Psychiatry 2000;68(1):112-113.

Van den Bogaard B, Draijer R, Westerhof BE, van den Meiracker AH, van Montfrans GA, van den Born BJH. Effects on peripheral and central blood pressure of cocoa with natural or high-dose theobromine. Hypertension 2010;56(5):839-846.

Wang BS, Wang H, Wei ZH, Song YY, Zhang L, Chen HZ. Efficacy and safety of natural acetylcholinesterase inhibitor huperzine A in the treatment of Alzheimer's disease: an updated meta-analysis. J. Neural Transm (Vienna) 2009;116(4):457-465.

Wille HJ, Gonus P. Preparation of Fish Oil for Dietary Applications. In: Galli C, Simopolous AP, editors. Dietary ω3 and ω6 Fatty Acids. Biological Effects and Nutritional Essentiality. New York (NY): Plenum Press; 1989.

Williamson EM, editor. Major Herbs of Ayurveda. Edinburgh (GB): Churchill Livingstone; 2002.

Williamson EM, Evans FJ, Wren RC. Potter's New Cyclopaedia of Botanical Drugs and Preparations. Saffron Walden (GB): C.W. Daniel Company Limited; 1988.

Winston D, Maimes S. Adaptogens: Herbs for strength, stamina and stress relief. Rochester (VT): Healing Arts Press; 2007.

Winston D and Kuhn MA. Herbal Therapy and Supplements: A Scientific and Traditional Approach. Philadelphia (PA): Wolters Kluwer Health and Lippincott Williams & Wilkins; 2008.

WHO: World Health Organization. WHO monographs on selected medicinal plants 2004; Volume 2.

WHO: World Health Organization. WHO monographs on selected medicinal plants 1999; Volume 1.

Xu SS, Gao ZX, Weng Z, Du ZM, Xu WA, Yang JS, Zhang ML, Tong ZH, Fang YS, Chai XS et al. Efficacy of tablet huperzine-A on memory, cognition, and behavior in Alzheimer's disease. Acta Pharmacologica Sinica 1995;16(5):391-395.

Yamakoshi J, Shiojo R, Nakagawa S, Izui N, Ogihaara T. Hypotensive Effects and Safety of Less-salt Soy Sauce Containing gamma-aminobutyric acid (GABA) on High-Normal Blood Pressure and Mild Hypertensive Subjects. Yakuri To Chirya 2006;34:691-709 [English Translation].

Yang G, Wang Y, Tian J, Liu JP. Huperzine A for Alzheimer's Disease: A Systematic Review and Meta-Analysis of Randomized Clinical Trials. PLoS One 2013;8(9):1-8.

Yurko-Mauro K, McCarthy D, Rom D, Nelson EB, Ryan AS, Blackwell A, Salem N, Stedman M. Beneficial effects of docosahexaenoic acid on cognition in age-related cognitive decline, Alzheimer's and Dementia 2010; 6:1-9.

Zaluski D, Kuzniewski R, Janeczko Z. HPTLC-profiling of eleutherosides, mechanism of antioxidative action of eleutheroside E1, the PAMPA test with LC/MS detection and the structure-activity relationship. Saudi Journal of Biological Sciences 2018;25(3):520-528.

Zangara A. The psychopharmacology of huperzine A: an alkaloid with cognitive enhancing and neuroprotective properties of interest in the treatment of Alzheimer's disease. Pharmacology, Biochemistry and Behavior 2003;75(3):675-686.

Zimmerman DR. Zimmerman's Complete Guide to Non-prescription Drugs, 2nd edition. Detroit (MI): Gale Research Inc.; 1992.

Zwickey H, Brush J, Iacullo CM, Connelly E, Gregory WL, Soumyanath A, Buresh R. The effect of Echinacea purpurea, astragalus membranaceus and Glycyrrhiza glabra on CD25 Expression in Humans: A Pilot Study. Phytotherapy Research 2007;21(11):1109-1112.

Zwyghuizen-Doorenbos A, Roehrs TA, Lipschutz L, Timms V, Roth T. Effects of caffeine on alertness. Psychopharmacology 1990;100(1):36-39.

References reviewed

Blumenthal M, Busse W, Goldberg A, Gruenwald, J, Hall T, Riggins C, Rister R. The complete German Commission E monographs. Austin, TX: American Botanical Council; 1998.

Brinker F. The Toxicology of Botanical Medicines. Sandy (OR): Eclectic Medical Publications; 2000.

Calvani, M., Carta, A., Benedetti, N., Iannuccelli, M., Caruso, G. Action of acetyl-L-carnitine in neurodegeneration and Alzheimer's disease. Aging and Cellular Defense Mechanisms 1992;663:483-486.

Gogte VVM. Ayurvedic Pharmacology and Therapeutic Uses of Medicinal Plants. Mubai (IN): Bharatiya Vidya Bhavan; 2000.

Keegan AP, Stough C, Paris D, Luis CA, Abdullah L, Ait-ghezala G, Crawford F, Mullan M. Bacopa monnieri supplementation has no effect on serum brain-derived neurotrophic factor levels but beneficially modulates nuclear factor kappa B and cyclic AMP response element-binding protein levels in healthy elderly subjects. Journal of clinical and translational research 2023;9(1): 50-58.

Rege NN, Thatte UM, and Dahanukar SA. Adaptogenic properties of six rasayana herbs used in Ayurvedic medicine. Phytotherapy Research 1999;13(4):275-291.

Sayre, L. A Manual of Organic Materia Medica and Pharmacognosy. P. Blakiston's Son & Company; 1917.

Upton R, editor. American Herbal Pharmacopoeia and Therapeutic Compendium: Astragalus Root (Astragalus membranaceus & Astragalus membranaceus var. mongolicus)-Analytical, Quality Control, and Therapeutic Monograph. Santa Cruz (CA): American Herbal Pharmacopoeia; 1999.

Wilson L. Review of adaptogenic mechanisms: Eleutherococcus senticosus, Panax ginseng, Rhodiola rosea, Schisandra chinensis and Withania somnifera. Australian Journal of Medical

Herbalism 2007;19(3):126-131.

Zwickey H, Brush J, Iacullo CM, Connelly E, Gregory WL, Soumyanath A, Buresh R. The effect of Echinacea purpurea, astragalus membranaceus and Glycyrrhiza glabra on CD25 Expression in Humans: A Pilot Study. Phytotherapy Research 2007;21(11):1109-1112.