

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 PLA and product label at the applicant's discretion.
- ▶ The solidus (/) indicates that the terms and/or the statements are synonymous. Either term or statement may be selected by the applicant.

Date

March 12, 2021

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

Table 1. Proper name(s), Common name(s), Source information

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
Group 1: Ingredients with nervine action				
<i>Anemone pulsatilla</i>	<ul style="list-style-type: none"> • European pasqueflower • Pasqueflower • Pulsatilla 	<i>Anemone pulsatilla</i>	Herb top	Dried ¹
<i>Avena sativa</i>	<ul style="list-style-type: none"> • Common oat • Oat • Red oat • Side oat • Tree oat 	<i>Avena sativa</i>	Seed	Dried
<i>Nepeta cataria</i>	<ul style="list-style-type: none"> • Catmint • Catnep • Catnip • Catswort • Field balm 	<i>Nepeta cataria</i>	Herb top	Dried
<i>Matricaria chamomilla</i>	<ul style="list-style-type: none"> • Blue chamomile • Chamomile • Common chamomile • German chamomile • Hungarian chamomile • Matricaria • Scented chamomile • Scented mayweed • Sweet false chamomile 	<i>Matricaria chamomilla</i>	Flower	Dried



	<ul style="list-style-type: none"> • True chamomile • Wild chamomile 			
<i>Panax quinquefolius</i>	<ul style="list-style-type: none"> • American ginseng • Occidental ginseng • Sang • Shang • Xi yang shen 	<i>Panax quinquefolius</i>	Root	Dried
<i>Tilia cordata</i>	<ul style="list-style-type: none"> • Linden • Littleleaf linden • Small-leaf European linden • Small-leaf lime • Small-leaf lime tree • Small-leaf linden • Tilia 	<i>Tilia cordata</i>	Flower	Dried
<i>Tilia platyphyllos</i>	<ul style="list-style-type: none"> • Big-leaf linden • Broadleaf lime • Large-leaf lime • Large-leaf linden • Linden • Tilia 	<i>Tilia platyphyllos</i>	Flower	Dried
<i>Tilia x europaea</i>	<ul style="list-style-type: none"> • European Lime tree • European linden • Lime • Lime tree • Linden • Tilia 	<i>Tilia x europaea</i>	Flower	Dried
<i>Turnera diffusa</i>	Damiana	<i>Turnera diffusa</i>	<ul style="list-style-type: none"> • Leaf • Leaf and stem 	Dried
<i>Withania somnifera</i>	<ul style="list-style-type: none"> • Asgandh • Ashwagandha • Asvagandha • Winter-cherry • Withania 	<i>Withania somnifera</i>	Root	Dried

Group 2: Ingredients with sedative action

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
<i>Eschscholzia californica</i>	California-poppy	<i>Eschscholzia californica</i>	Herb top	Dried
<i>Humulus lupulus</i>	<ul style="list-style-type: none"> • Bine • European hop • Hop • Hops 	<i>Humulus lupulus</i>	Strobile	Dried
<i>Hypericum perforatum</i>	<ul style="list-style-type: none"> • Goatweed • Hypericum • St. John's wort • St. John's-wort 	<i>Hypericum perforatum</i>	Herb top	Dried



<ul style="list-style-type: none"> • 5-Hydroxy-L-tryptophan • L-5-Hydroxytryptophan 	<ul style="list-style-type: none"> • L-5-HTP • L-5-Hydroxytryptophan 	<i>Griffonia simplicifolia</i> ³	Seed	N/A
<i>Melissa officinalis</i>	<ul style="list-style-type: none"> • Balm • Bee balm • Lemon balm • Melissa 	<i>Melissa officinalis</i>	Herb top	Dried
<i>Passiflora incarnata</i>	<ul style="list-style-type: none"> • Apricot-vine • Maypop • Maypop passionflower • Passionflower 	<i>Passiflora incarnata</i>	Herb top	Dried
<i>Scutellaria lateriflora</i>	<ul style="list-style-type: none"> • Helmet flower • Hoodwort • Mad-dog scullcap • Quarter bonnet • Scullcap • Skullcap • Virginian skullcap 	<i>Scutellaria lateriflora</i>	Herb top	Dried
<i>Stachys officinalis</i>	<ul style="list-style-type: none"> • Bishop's-wort • Purple betony • Wood betony 	<i>Stachys officinalis</i>	Herb top	Dried
<i>Valeriana officinalis</i>	<ul style="list-style-type: none"> • Common valerian • Garden-heliotrope • Garden valerian • Valerian 	<i>Valeriana officinalis</i>	<ul style="list-style-type: none"> • Root • Root and rhizome 	Dried
<i>Withania somnifera</i>	<ul style="list-style-type: none"> • Asgandh • Ashwagandha • Asvagandha • Winter-cherry • Withania 	<i>Withania somnifera</i>	Root	Dried

Group 3: 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	<ul style="list-style-type: none"> • Acetyl-L-carnitine arginate dihydrochloride² • Acetyl L-carnitine hydrochloride² 	N/A	N/A	N/A	N/A



<i>Bacopa monnieri</i>	<ul style="list-style-type: none"> • Bacopa • Moneywort • Water hyssop 	N/A	<i>Bacopa monnieri</i>	N/A	Herb top	Dried
<ul style="list-style-type: none"> • 2-[[[(2R)-2,3-Dihydroxypropoxy]hydroxyphosphinyl]oxy]-N,N,N-trimethylethanaminium hydroxide inner salt • d-Choline hydroxide 2,3-dihydroxypropyl hydrogen phosphate inner salt • L-alpha-Glycerolphosphoryl choline 	Choline alfoscerate	Choline alfoscerate ²	N/A	N/A	N/A	N/A
Cod liver oil	<ul style="list-style-type: none"> • Cod liver oil • Lecoris Aselli Oleum 	N/A	N/A	<ul style="list-style-type: none"> • Melanogrammus aeglefinus • Arctogadus glacialis • Gadus macrocephalus • Gadus morhua • Gadus ogac • Pollachius virens 	Liver	N/A
<i>Eleutherococcus senticosus</i>	<ul style="list-style-type: none"> • Ci wu jia • Eleuthero • Siberian ginseng 	N/A	<i>Eleutherococcus senticosus</i>	N/A	Root	Dried
Fish oil	Fish oil	N/A	N/A	<ul style="list-style-type: none"> • Ammodytidae • Carangidae • Clupeidae • Engraulida • Osmeridae • Salmonidae • Scombridae 	Whole	N/A
<i>Ginkgo biloba</i>	<ul style="list-style-type: none"> • Ginkgo • Ginkgo biloba • Maidenhair-tree • Baiguo • Icho 	N/A	<i>Ginkgo biloba</i>	N/A	Leaf	N/A
<i>Panax ginseng</i>	<ul style="list-style-type: none"> • Asian ginseng • Chinese ginseng • Hong shen • Korean ginseng • Korean red ginseng 	N/A	<i>Panax ginseng</i>	N/A	<ul style="list-style-type: none"> • Root • Rootlet 	Dried



	<ul style="list-style-type: none"> • Oriental ginseng • Panax ginseng • Red ginseng • Ren shen 					
Phosphatidylserine	Phosphatidylserine	N/A	<i>Helianthus annuus</i> ³	N/A	Seed	N/A
		Phosphatidylserine-enriched soy lecithin ²	N/A	N/A	N/A	N/A
		Phosphatidylserine ²	N/A	N/A	N/A	N/A
<i>Rhodiola rosea</i>	<ul style="list-style-type: none"> • Hong jing tian • King's-crown • Rhodiola • Roseroot 	N/A	<i>Rhodiola rosea</i>	N/A	<ul style="list-style-type: none"> • Root • Root and rhizome 	Dried
<i>Schizochytrium spp.</i>	Schizochytrium Oil	N/A	<i>Schizochytrium spp.</i>	N/A	Whole	N/A

Group 4: Caffeine/Ingredients containing caffeine

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
<ul style="list-style-type: none"> • 1,3,7-Trimethylxanthine • 3,7-Dihydro-1,3,7-trimethyl-1H-purine-2,6-dione 	Caffeine	<ul style="list-style-type: none"> • Caffeine² • Caffeine citrate² 	N/A	N/A	N/A
<i>Ilex paraguariensis</i>	<ul style="list-style-type: none"> • Brazilian tea • Mate • Paraguayan tea • Paraguay tea • St Bartholomew's tea • Yerba mate 	N/A	<i>Ilex paraguariensis</i>	Leaf	Dried
<i>Paullinia cupana</i>	Guarana	N/A	<i>Paullinia cupana</i>	Seed	Dried

Group 5: Ingredient with action on cognitive fatigue

Proper name(s)	Common name(s)	Source information	
		Source ingredient(s)	Preparation(s)
<ul style="list-style-type: none"> • (S)-alpha-Amino-4-hydroxybenzenepropanoic acid 	<ul style="list-style-type: none"> • L-Tyrosine • Tyrosine 	<ul style="list-style-type: none"> • L-Tyrosine ethyl ester² • N-Acetyl tyrosine² 	N/A

• L-Tyrosine			
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Group 6: Ingredients with action on memory

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
<i>Bacopa monnieri</i>	<ul style="list-style-type: none"> Bacopa Moneywort Water hyssop 	<i>Bacopa monnieri</i>	<ul style="list-style-type: none"> Whole plant Herb top 	Dried
<i>Withania somnifera</i>	<ul style="list-style-type: none"> Asgandh Ashwagand Asvagandha Winter-cherry Withania 	<i>Withania somnifera</i>	Root	Dried

Group 7: Ingredients with relaxation action

Proper name(s)	Common name(s)	Source information			
		Source ingredient(s)	Source material(s)	Part(s)	Preparation(s)
4-Aminobutanoic acid	<ul style="list-style-type: none"> GABA gamma-Aminobutyric acid 	N/A	<i>Lactobacillus hilgardii</i> ³	Whole cell for biosynthesis	N/A
		4-Aminobutanoic acid ²	N/A	N/A	N/A
<ul style="list-style-type: none"> L-Theanine N-Ethyl-L-glutamine 	L-Theanine	N/A	<i>Camellia sinensis</i> ³	Leaf	N/A
		L-Theanine ²	N/A	N/A	N/A

Group 8: Ingredients with adaptogen action

Proper name(s)	Common name(s)	Source information		
		Source material(s)	Part(s)	Preparation(s)
<i>Asparagus racemosus</i>	<ul style="list-style-type: none"> Shatamuli Shatavari 	<i>Asparagus racemosus</i>	Root	Dried
<i>Astragalus membranaceus</i>	<ul style="list-style-type: none"> Astragalus Huangqi Huang qi Membranaceus milk vetch Membranous milk-vetch Milk vetch root Mo jia huang qi 	<i>Astragalus membranaceus</i>	Root	Dried
<i>Eleutherococcus senticosus</i>	<ul style="list-style-type: none"> Ci wu jia Eleuthero Siberian ginseng 	<i>Eleutherococcus senticosus</i>	<ul style="list-style-type: none"> Root Root and rhizome 	Dried



<i>Ganoderma lucidum</i>	<ul style="list-style-type: none"> • Ganoderma • Ling zhi • Reishi 	<i>Ganoderma lucidum</i>	<ul style="list-style-type: none"> • Cultured mycelium • Fruiting body • Mycelium 	Dried
<i>Glycyrrhiza glabra</i>	<ul style="list-style-type: none"> • Guang guo gan cao • Licorice • Liquorice 	<i>Glycyrrhiza glabra</i>	<ul style="list-style-type: none"> • Root • Root and stolon 	Dried
<i>Ocimum tenuiflorum</i>	<ul style="list-style-type: none"> • Holy basil • Rama tulsi • Sacred basil • Tulsi 	<i>Ocimum tenuiflorum</i>	Leaf	Dried
<i>Panax ginseng</i>	<ul style="list-style-type: none"> • Asian ginseng • Chinese ginseng • Hong shen • Korean ginseng • Korean red ginseng • Oriental ginseng • Panax ginseng • Red ginseng • Ren shen 	<i>Panax ginseng</i>	<ul style="list-style-type: none"> • Root • Rootlet 	Dried
<i>Panax quinquefolius</i>	<ul style="list-style-type: none"> • American ginseng • Occidental ginseng • Sang • Shang • Xi yang shen 	<i>Panax quinquefolius</i>	Root	Dried
<i>Rhodiola rosea</i>	<ul style="list-style-type: none"> • Hong jing tian • King's-crown • Rhodiola • Roseroot 	<i>Rhodiola rosea</i>	<ul style="list-style-type: none"> • Root • Root and rhizome 	Dried
<i>Schisandra chinensis</i>	<ul style="list-style-type: none"> • Chinese Magnoliavine • Schisandra • Wu wei zi 	<i>Schisandra chinensis</i>	Fruit	Dried
<i>Tinospora cordifolia</i>	Guduchi	<i>Tinospora cordifolia</i>	Stem	Dried



<i>Withania somnifera</i>	<ul style="list-style-type: none"> • Asgandh • Ashwagandh • Asvagandha • Winter-cherry • Withania 	<i>Withania somnifera</i>	<ul style="list-style-type: none"> • Root • Whole plant 	Dried
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References: Proper names: NHPID 2019; Common names: NHPID 2019; Source information: Group 1: Bone 2003; Hoffman 2003; Bradley 1992; Williamson et al. 1988; BHP 1983; Remington and Wood 1918; BPC 1911. Group 2: Hoffman 2003; Williamson et al. 1988. Group 3: Yurko-Mauro et al. 2010; Calabrese et al. 2008; Bone 2003; De Jesus Moreno Moreno 2003; Parnetti et al. 2001; Barbagallo et al. 1994; Parnetti et al. 1993; Canal et al. 1991. Group 4: EMA 2013; ESCOP 2009; Bradley 2006; Kennedy et al. 2004; Taylor 2003; Barnes et al. 2002; BHP 1983. Group 6: Bone 2003; API 2001. Group 7: Kanehira et al. 2011; Abdou et al. 2006; Yamakoshi et al. 2006. Group 8: Upton 2012; Winston and Kuhn 2008; Winston and Maimes 2007; WHO 2004; Bone 2003; Hoffman 2003; Thomsen 2002; Williamson 2002; Blumenthal et al. 2000; Upton 1999; WHO 1999; Bradley 1992; BHP 1983.

¹Do not use the fresh plant (Bone 2003; Hoffman 2003; Bradley 1992; BHP 1983).

²Synthetic

³Isolate

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 the age category listed in this monograph and specified route of administration are indicated in the Compendium of Monographs Guidance Document.

Use(s) or Purpose(s) and Dose(s)

Note

Claims for traditional use must include the term “Herbal Medicine”, “Traditional Chinese Medicine”, or “Ayurveda”.

Subpopulation(s)

Adults 18 years and older

Quantity(ies)

Refer to Table 2. below.

Table 2. Cognitive function uses or purposes and associated daily doses

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
Group 1: Ingredients with nervine action			
(Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (nervine/calimative)	<i>Anemone pulsatilla</i> (Pasqueflower)	Dry, Powder, 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
	<i>Avena sativa</i> (Oat)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.6-20 grams dried seed, per day
	<i>Matricaria chamomilla</i> (German chamomile)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-24 grams dried flower, per day
	<i>Nepeta cataria</i> (Catnip)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.2-12 grams dried herb top, per day
	<i>Panax quinquefolius</i> (American ginseng)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.5-12 grams dried root, per day
	<i>Tilia cordata</i> (Small-leaf linden)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-12 grams dried flower, per day
	<i>Tilia platyphyllos</i> (Large-leaf linden)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-12 grams dried flower, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
	<i>Tilia x europaea</i> (European Linden)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	1.5-12 grams dried flower, per day
	<i>Turnera diffusa</i> (Damiana)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1.5-4 grams dried leaf/leaf and stem, per day
Traditionally used in Ayurveda to balance aggravated Vata (nervine)	<i>Withania somnifera</i> (Ashwagandha)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-6 grams dried root, per day
Group 2: Ingredients with calmative sedative action			
(Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (calmative) AND/OR (Traditionally) used in Herbal Medicine as a sleep aid (during times of mental stress)	<i>Eschscholzia californica</i> (California poppy)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.2-3 grams dried herb top, per day
	<i>Humulus lupulus</i> (Hops)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.5-6 grams dried strobile, per day
	<i>Melissa officinalis</i> (Lemon balm)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.4-13.5 grams dried herb top, per day
	<i>Passiflora incarnata</i> (Passionflower)	Dry, Powder, 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
	<i>Scutellaria lateriflora</i> (Skullcap)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.25-12 grams dried herb top, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	3-12 grams dried herb top, per day
	<i>Stachys officinalis</i> (Wood betony)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-4 grams dried herb top, per day
(Traditionally) used in Herbal Medicine to help relieve restlessness and/or nervousness (calmative)	<i>Hypericum perforatum</i> (St. John's wort)	Dry, Powder, 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 (calmative) AND/OR (Used in Herbal Medicine to) help(s) relieve sleep disturbances associated with mood imbalance	<i>Hypericum perforatum</i> (St. John's wort)	Standardized Extracts (Dry extract)	600-1800 milligrams of extract, per day, standardized to 3-6% hyperforin and/or 0.12-0.28% hypericin; Not to exceed 600 milligrams of extract per single dose
Used as a sleep aid/to help promote sleep	L-5-Hydroxytryptophan (L-5-HTP)	Isolate	100-200 milligrams, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
(Traditionally) used in Herbal Medicine to relieve restlessness and/or nervousness (calmative) AND/OR (Traditionally used in Herbal Medicine as a sleep aid/(to) help(s) to promote sleep	<i>Valeriana officinalis</i> (Valerian)	Dry, Powder, 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 of dried root or root and rhizome, per day; Not to exceed 3.6 grams per single dose and: 0.04-0.90% valerenic acid Or 0.10-0.90% sesquiterpenic acids
Traditionally used in Ayurveda as a sleep aid and/or to balance aggravated Vata (nervine)	<i>Withania somnifera</i> (Ashwagandha)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-6 grams dried root, per day
Group 3: Ingredients with cognitive support action			
Helps support cognitive health and/or brain function	Acetyl-L-Carnitine (Acetylcarnitine)	N/A	1.5-4 grams, per day
	<i>Bacopa monnieri</i> (Bacopa)	Standardized Extracts (Dry extract)	300 milligrams of extract, per day, standardized to 40-55% bacosides
	Cod liver oil	Standardized fixed oil	18 years: 0.77-3.7 grams Cod liver oil, per day And 100-1,258 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

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
			19 years and older: 0.77-4 grams Cod liver oil, per day And 100-1,360 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
	L-alpha-Glycerophosphorylcholine (Choline alfoscerate)	N/A	1.2 grams, per day
	Fish oil	Standardized fixed oil	18 years: 100-2,500 milligrams EPA and DHA including at least 100 milligrams DHA, per day 19 years and older: 100-5,000 milligrams EPA and DHA including at least 100 milligrams DHA, per day
	Phosphatidylserine	N/A	300 milligrams, per day
	Schizochytrium oil	Standardized fixed oil	200-2,000 milligrams DHA, per day
Used in Herbal Medicine to help improve mental performance after periods of mental exertion	<i>Eleutherococcus senticosus</i> (Eleuthero)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	0.91-6 grams dried root, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
Helps to enhance cognitive function and/or memory in adults	<i>Ginkgo biloba</i> (Ginkgo)	Standardized Extracts (Dry extract)	80-240 milligrams of extract, per day (50:1; quantity crude equivalent 4 - 12 g of dried leaves) and: 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	<i>Panax ginseng</i> (Panax ginseng)	Dry, Powder, 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 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)	<i>Rhodiola rosea</i> (Rhodiola)	Tincture	1.2-1.8 grams of dried root/root and rhizome, per day
		Standardized Extracts (Dry extract)	144-680 milligrams of extract, per day; Not to exceed 200 milligrams per single dose and: 0.8 - 3% salidroside And/Or 1 - 6% rosavins
Group 4: Caffeine/Ingredients containing caffeine			
Helps (temporarily) to promote alertness and wakefulness, and to enhance cognitive performance	1,3,7-trimethylxanthine (Caffeine)	N/A	100-400 milligrams, per day; and 100-200 milligrams per single dose



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

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
Group 5: Ingredient with action on cognitive fatigue			
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
Group 6: Ingredients with action on memory			
Traditionally used in Ayurveda for memory enhancement	<i>Bacopa monnieri</i> (Bacopa)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1-6.5 grams dried whole plant/herb top, per day
	<i>Withania somnifera</i> (Ashwagandha)	Dry, Powder, Non-Standardized Extracts (Dry extract, Tincture, Fluid extract, Decoction, Infusion)	2-6 grams dried root, per day
Helps support memory	<i>Bacopa monnieri</i> (Bacopa)	Standardized Extracts (Dry extract)	300 mg of extract, per day, standardized to 40-55% bacosides
Group 7: Ingredients with relaxation action			
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
Group 8: Ingredients with adaptogen action			
Used in Herbal Medicine as an Adaptogen to help increase energy and resistance to stress (e.g. in case of mental and physical fatigue related to stress)	<i>Asparagus racemosus</i> (Shatavari)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-6 grams dried root, per day
	<i>Astragalus membranaceus</i> (Astragalus)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2-4.8 grams dried root, per day
	<i>Eleutherococcus senticosus</i> (Eleuthero)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1-6 grams dried root/root and rhizome, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	2-3 grams dried root/root and rhizome, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
	<i>Ganoderma lucidum</i> (Reishi)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1.5-6 grams dried cultured mycelium/ fruiting body/mycelium, per day
		Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1.5-6 grams of dried cultured mycelium/ fruiting body/mycelium, per day and not to exceed 40 % polysaccharides
		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
	<i>Glycyrrhiza glabra</i> (Licorice)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.6-6 grams dried root/root and stolon, per day
	<i>Ocimum tenuiflorum</i> (Holy basil)	Dry, Powder, 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
	<i>Panax ginseng</i>	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	0.5-3 grams dried root/rootlet, per day
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	0.5-2 grams dried root/rootlet, per day
	<i>Panax quinquefolius</i> (American ginseng)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	1-3 grams dried root, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
		Non-Standardized Aqueous Extracts (Dry extract, Decoction, Infusion)	6-9 grams dried root, per day; Not to exceed 3 grams per single dose
	<i>Rhodiola rosea</i> (Rhodiola)	Non-Standardized Ethanolic Extracts (Dry extract)	144-400 milligrams of dry extract and a Quantity Crude Equivalent (QCE) of 216-2,000 milligrams of dried root/root and rhizome, per day; Not to exceed 200 milligrams of dry extract and a QCE of 1 gram of dried root/root and rhizome, per single dose
		Tincture	1.2-1.8 grams of dried root/root and rhizome, per day
		Standardized Extracts (Dry extract)	144-680 milligrams of extract, per day; Not to exceed 200 milligrams per single dose and: 0.8 - 3% salidroside And/Or 1 - 6% rosavins
	<i>Schisandra chinensis</i> (Schisandra)	Dry, Powder, 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
	<i>Tinospora cordifolia</i> (Guduchi)	Dry, Powder, 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
	<i>Withania somnifera</i> (Ashwagandha)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	2.5-6.5 grams dried root/whole plant, per day

Uses or Purposes ¹	Medicinal Ingredients	Methods of preparation	Doses/day ²
(Used as an Adaptogen) (to help(s) (to) temporarily relieve symptoms of stress (such as mental fatigue and sensation of weakness))	<i>Rhodiola rosea</i> (Rhodiola)	Non-Standardized Ethanolic Extracts (Dry extract)	144-400 milligrams of dry extract and a Quantity Crude Equivalent (QCE) of 216-2,000 milligrams of dried root/root and rhizome, per day; Not to exceed 200 milligrams of dry extract and a QCE of 1 gram of dried root/root and rhizome, per single dose
		Tincture	1.2-1.8 grams of dried root/root and rhizome, per day
		Standardized Extracts (Dry extract)	144-680 milligrams of 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)	<i>Asparagus racemosus</i> (Shatavari)	Dry, Powder, Non-Standardized Ethanolic Extracts (Dry extract, Tincture, Fluid extract)	3-6 grams dried root, per day

¹References consulted for the uses or purposes: Group 1: Bone 2003; Hoffman 2003; Ellingwood 1983; Felter and Lloyd 1983; Grieve 1971. Group 2: Toby et al. 2010; Williamson et al. 1988. Group 3: Morgan and Stevens 2010; Yurko-Mauro et al. 2010; Calabrese et al. 2008; Malaguanera et al. 2008; De Jesus Moreno Moreno 2003; 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. Group 4: 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. Group 6: Barbhaiya et al. 2008; Stough et al. 2008; Raghav et al. 2006; Murthy 2004; Roodenrys et al. 2002; API 2001. Group 7: Kanehira et al. 2011; Abdou et al. 2006. Group 8: Upton 2012; Winston and Maimes 2007; Mills and Bone 2005; API 2004; WHO 2004; Bone 2003; Hoffman 2003; Thomsen 2002; Williamson 2002; Blumenthal et al. 2000; Upton 1999; WHO 1999; Bradley 1992;

²References consulted for the doses: Group 1: CNF 2012; Bone 2003; Hoffman 2003; Bradley 1992; Williamson et al. 1988; BHP 1983; Ellingwood 1983; Felter and Lloyd 1983; Remington and Wood 1918; BPC 1911. Group 2: Williamson et al. 1988. Group 3: 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; De Jesus Moreno Moreno 2003; 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. Group 4: Health Canada 2018; EMA 2013; Health Canada 2012; EMA 2010; ESCOP 2009; Bradley 2006; Taylor 2003. Group 6: Bone 2003; API 2001. Group 7: Kanehira et al. 2011; Powers et al. 2007; Yamakoshi et al. 2006. Group 8: Upton 2012; Winston and Maimes 2007; Mills and Bone 2005; API 2004;

WHO 2004; Bone 2003; Hoffman 2003; Thomsen 2002; Williamson 2002; Blumenthal et al. 2000; Upton 1999; WHO 1999; Bradley 1992.

Direction(s) for use

See Table 4 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 Table 2.
- ▶ 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.
- ▶ Traditional claims: When traditional claim(s) is/are made, each traditional claim must be preceded with the medicinal ingredient(s) that support(s) it, unless it is a single medicinal ingredient product.
- ▶ If products contain caffeine (Group 4), sedative/relaxation claims are not permitted. If products contain sedatives (Group 2), alertness claims are not permitted.

Rules for Caffeine

- ▶ The maximum amount of total caffeine permitted from all ingredients in the product is 400 mg/day, and 200 mg per single dose.
- ▶ The maximum daily amount of caffeine permitted for each medicinal ingredient must be respected. Please see Table 2 above.
- ▶ 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 100 mg/day, risk statements from the NNHPD Caffeine Monograph are required. Please see Table 4 below.
- ▶ Additional synthetic caffeine added to Guarana and/or Yerba mate extracts must be represented as a separate medicinal ingredient.

Rules for sedatives

- ▶ When combining L-5-HTP, St. John's Wort, and/or Passionflower, an additional risk statement is required. Please see Table 4 below.
- ▶ If ingredients are combined within Group 2 (Ingredients with sedative action), the sum of the percentages of the maximum daily reference dose must not exceed 100%, for all

ingredients contributing to support the claim. Please see Table 3 below.

Table 3. Combination Table to assess Safety of Group 2 Ingredients

Additive Indication	Group 2 (e.g. Traditionally 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 Monograph Reference Dose (%)
<i>Eschscholzia californica</i> (California poppy)	0.5 g	3 g	0.5/3 = 16.67%
<i>Humulus lupulus</i> (Hops)	4 g	6 g	4/6 = 66.66%
<i>Hypericum perforatum</i> (St John's wort)	0.5 g	12.6 g	0.5/12.6 = 3.96%
Sum of Percentages			87.3%

The calculations are performed as follows:

- ▶ Percentage of the Maximum Daily Monograph Reference Dose = $[(\text{Maximum Daily Recommended Dose on PLA form}) / (\text{Maximum Daily Monograph Reference Dose})] \times 100\%$

Safety assessment - Sum of Percentages:

- ▶ In the example above, the sum of Percentages of the Maximum Daily Monograph Reference Dose is 87.3%, which is less than 100%. Safety of the combination of ingredients is therefore supported.

Duration(s) of use

See Table 4 below.

Risk information

Consult Table 4 for appropriate statements related to each medicinal ingredient. The medicinal ingredients in Table 4 are associated with the required numbered statements below.

1. As per the respective NNHPD monograph.

Duration(s) of Use

2. Ayurvedic bacopa claim only: Use for at least 6 weeks to see beneficial effects.
3. *Products providing 300 mg or more GABA per day*: Consult a health care



practitioner/health care provider/health care professional/doctor/physician for use beyond 4 weeks.

Caution(s) and warning(s)

4. Consult a health care practitioner/health care provider/health care professional/doctor/physician if symptoms persist or worsen.
5. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you are pregnant or breastfeeding.
6. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you are pregnant.
7. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you are breastfeeding.
8. Stop use if you experience severe stomach and/or intestinal irritation.
9. Do not use if you have gastrointestinal irritation.
10. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you have a urinary tract disorder and/or kidney disease.
11. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you have liver disease, kidney disease and/or a seizure disorder.
12. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you have high blood pressure.
13. *Products providing 300 mg or more GABA per day:* Do not use with alcohol.
14. Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you have glaucoma, and/or overactive bladder syndrome (detrusor instability).
15. Avoid taking with health products or foods that contain caffeine and/or increase blood pressure (e.g. medications, coffee, tea, colas, cocoa, guarana, mate, bitter orange extract, synephrine, octopamine, ephedra, ephedrine).
16. This product is not intended as a substitute for sleep.
17. *Combination of ingredients resulting in a total caffeine content of more than 300 mg per day:* Consult a health care practitioner/health care provider/health care professional/doctor/physician prior to use if you are of childbearing age.
18. Stop use and consult a health care practitioner/health care provider/health care professional/doctor/physician if you experience any of the following symptoms within a few hours after taking this product: changes in mental state such as restlessness or confusion, increased heart rate, enlarged pupils, loss of muscle coordination, sweating, shivering and/or gastrointestinal symptoms such as nausea, vomiting, diarrhea.

Contraindication(s)

19. Do not use this product if you are pregnant or breastfeeding.
20. Do not use this product if you are pregnant.

Known adverse reaction(s)

21. May cause digestive problems.



Table 4. 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)	4,5,13	3	
Acetyl-L-Carnitine (Acetylcarnitine)	5,11,21		
<i>Asparagus racemosus</i> (Shatavari)	6		
<i>Astragalus membranaceus</i> (Astragalus)	1		
<i>Avena sativa</i> (Oat)	4		
<i>Bacopa monnieri</i> (Bacopa)	5,21	2	
Cod liver oil	1		
<i>Eleutherococcus senticosus</i> (Eleuthero)	1	1	
<i>Eschscholzia californica</i> (California poppy)	1		
Fish oil	1		
<i>Ganoderma lucidum</i> (Reishi)	1		1
<i>Ginkgo biloba</i> (Ginkgo)	1	1	
<i>Glycyrrhiza glabra</i> (Licorice)	1	1	
<i>Humulus lupulus</i> (Hops)	1		
<i>Hypericum perforatum</i> (St. John's wort)	1	1	
<i>Ilex paraguariensis</i> (Yerba mate)	5,12		
L-5-Hydroxytryptophan (L-5-HTP)	1		1
L-alpha-Glycerophosphorylcholine (Choline alfoscerate)	5		
L-Theanine	1		
L-Tyrosine	1	1	1
<i>Matricaria chamomilla</i> (German chamomile)	1		
<i>Melissa officinalis</i> (Lemon balm)	1		
<i>Nepeta cataria</i> (Catnip)	1		
<i>Ocimum tenuiflorum</i> (Holy basil)	1		
<i>Panax ginseng</i> (Asian ginseng)	1	1	
<i>Panax quinquefolius</i> (American ginseng)	1		
<i>Passiflora incarnata</i> (Passionflower)	1		
<i>Paullinia cupana</i> (Guarana)	5,12		
Phosphatidylserine	1		
<i>Anemone pulsatilla</i> (Pasqueflower)	4,8,9,10,19		
<i>Rhodiola rosea</i> (Rhodiola)	1		
<i>Schisandra chinensis</i> (Schisandra)	7,20		
<i>Scutellaria lateriflora</i> (Skullcap)	1		
<i>Stachys officinalis</i> (Wood Betony)	4,5		
<i>Tilia cordata</i> (Small-leaf linden)	1		
<i>Tilia platyphyllos</i> (Large-leaf linden)	1		
<i>Tilia x europaea</i> (European linden)	1		



<i>Tinospora cordifolia</i> (Guduchi)	5		
<i>Turnera diffusa</i> (Damiana)	4,7,20		
<i>Valeriana officinalis</i> (Valerian)	1		
<i>Withania somnifera</i> (Ashwagandha)	1		
Combination of ingredients resulting in a total caffeine content of 100 mg/day or more (e.g. Yerba mate and Guarana)	as per the caffeine monograph		
Combination of two or more of the following ingredients: L-5-HTP, St John's Wort, and/or Passionflower	18		

References consulted: EMA 2013; Gardner and McGuffin 2013; Fiebich et al. 2011; AMR 2010; Morgan and Stevens 2010; Okun et al. 2010; ESCOP 2009; Calabrese et al. 2008; CPS 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; FDA 2004; Nathan et al. 2004; Bone 2003; Erner et al. 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; Vahedi et al. 2000; Jee et al. 1999; Mester et al. 1995; Bradley 1992; Zimmerman 1992; Creighton and Stanton 1990; Rai et al. 1990; FDA 1988; 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

Products containing Cod liver oil, Fish oil or Schizochytrium oil

- ▶ Refrigerate after opening (except when encapsulated) (Senanayake and Fichtali 2006; Wille and Gonus 1989).
- ▶ Store in airtight container, protected from light (Ph.Eur. 2012; USP 35 2012).

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.



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