

Enjuvenile



Excipients

Dextrose monohydrate, natural vanilla flavour, sodium bicarbonate, citric acid

Pack size

800g

Dosage

38g (2 ½ rounded tablespoons) in water, soy milk or milk

Indications

May be beneficial for:

- Assisting in the reduction of inflammatory mediators
- Supporting healthy gastrointestinal, liver and kidney functions
- May help to support a healthy sleep process
- Possesses antioxidant activity

Interactions

Contains ingredients which may support elimination, and should therefore not be taken within 2-4 hours of other medication.

Contraindications

Contains sugars.

Formulations

Rice protein	19.5g	Potassium (as phosphate)	250mg
Choline bitartrate	200mg	Potassium (as sulphate)	250mg
Taurine	200mg	Ascorbic acid	100mg
Cysteine	50mg	d-alpha Tocopheryl Acid Succinate	
Glutamine	200mg	Equiv. Vitamin E	400IU
Glycine	500mg	Quercetin	200mg
Inositol	100mg	Cholecalciferol (Vitamin D3)	2.5µg
Carnitine	50mg	Selenium (as selenomethionine)	50µg
Creatine monohydrate	100mg	Manganese (as chelate)	500µg
Thiamine mononitrate	20mg	Withania somnifera (Withania) root dry	
Riboflavin	10mg	(equiv. Withania somnifera extract 100mg)	500mg
Nicotinamide	50mg	Rosemarinus officinalis (Rosemary) leaf dry	
Pyridoxal 5-phosphate	10mg	(equiv. Rosemarinus officinalis extract 50mg)	200mg
Pyridoxine hydrochloride	20mg	Humulus lupulus (Hops) flower dry	
Biotin	190µg	(equiv. Humulus lupulus extract 40mg)	300mg
Folic acid	400µg	Curcuma longa (Turmeric) rhizome dry	
Cyanocobalamin	400µg	(equiv. Curcuma longa extract 5mg)	100mg
Retinyl palmitate (Vitamin A)	2500IU	Bupleurum falcatum (Bupleurum) root dry	
Molybdenum (as trioxide)	100µg	(equiv. Bupleurum falcatum extract 50mg)	500mg
Magnesium (as phosphate)	100mg	Barosma betulina (Buchu) leaf dry	
Calcium (as citrate)	200mg	(equiv. Barosma betulina extract 25mg)	100mg
Zinc (as citrate)	15mg		

TECHNICAL INFORMATION

Sleep and Detoxification

Sleep, and more to the point, an adequate amount of good quality sleep, is vital to an individual's health and wellbeing. Sleep gives the body time to recuperate, repair and detoxify. It also gives the brain a chance to process the activities of the day, and plays a role in memory formation. Stage 1 sleep is particularly associated with immune activity and repair mechanisms, while stage 2 sleep is associated with memory development and cognitive function. Circadian rhythms control the sleep-wake cycle, however, other behaviour and physiology, governed by such cyclic rhythms include metabolism, xenobiotic detoxification and cellular proliferation.^[1]

Sleep and the Nervous System

Both hormones and neurotransmitters play a role in initiating sleep (and in the regulation of circadian rhythms). Neurotransmitters GABA and adenosine play a specific role in the initiation of sleep. As does the hormone melatonin, secreted from the pineal gland. Neuro-endocrine interactions such as this form a large part of the body's control mechanisms in the sleep wake cycle.

Numerous nutrients can support the nervous system and in particular, the inhibitory neurotransmitters associated with sleep. These include glutamine, vitamin B6 and taurine, precursors and co-factors for GABA production, the major inhibitory neurotransmitter in the brain. Herbs such as hops and withania may also provide beneficial effects on the nervous system. These herbs have been traditionally used to support stress and may have a calming effect.

Sleep and Inflammation

As well as the neuro-endocrine interactions described above, bidirectional communication between the brain and the immune system also plays a role in mediating sleep. Neurotransmitters

and hormones interact with immune cells to influence their functioning, such as cytokine release. Cytokines released by immune cells, particularly interleukin-1beta and tumour necrosis factor-alpha, signal neuroendocrine, autonomic, limbic and cortical areas of the CNS to affect neural activity and modify behaviours (including sleep), hormone release and autonomic function.^[2] Dysfunction of this system may therefore negatively affect sleep behaviours and vice versa. For example, reduction in sleep quantity contributing to elevated levels of inflammatory cytokines such as IL-6 in systemic circulation.^[3] Sleep conditions including obstructive sleep apnoea have also been associated with changes in inflammatory cytokine levels.^[4] Nutrients such as quercetin, glutamine, zinc and vitamin C may help to down regulate inflammation and protect against free radical damage.

Sleep and the Liver

The liver is the major organ of detoxification in the body. In Traditional Chinese Medicine, the time of the liver is between 1am and 3am.

There are a number of nutrients considered beneficial for liver function and detoxification. Antioxidants such as vitamin C, vitamin A, vitamin E, selenium and zinc may provide essential support for the neutralising of free radicals produced via phase I detoxification. Cysteine, glutamine and glycine may support glutathione production, an essential component of phase II detoxification conjugation pathways. B vitamins such as folic acid, B6 and B12 for methylation phase II pathways.

Sleep and Digestion

As the parasympathetic nervous system 'rest and digest' is dominant during slow wave sleep, this is seen as a time of activity by the digestive system. A lengthening of the sleep-wake cycle

Sleep and Detoxification

Sleep is seen as a time for the entire body to rest, recuperate and repair. Detoxification and elimination are an important part of the body's recuperative activities. The nervous system plays a large role in the regulation of sleep rhythms and also physiological function. The sympathetic nervous system is generally associated with 'fight and flight' and the parasympathetic with 'rest and digest'. During slow wave sleep, the parasympathetic nervous system becomes dominant and activity of metabolically important organs such as the liver and gastrointestinal system is favoured.

While good quality sleep is therefore important for effective detoxification, dysfunction of detoxification systems may also have a detrimental impact on sleep and contribute to the development of sleeping disorders and problems.

Digestion, immune function, and kidney function are also important considerations in their connections with sleep and detoxification.

(and of the wake time) results in a slowing down of the processes of digestion and evacuation of the bowels, in parallel with an apparent reduction of total energy expenditure.^[5] Supporting digestive processes is important during times of rest, relaxation and sleep.

Taurine is an important component of bile, which can support digestive processes through enhancing fat breakdown, absorption and utilisation as well as inhibiting the growth of some detrimental organisms. Glutamine, vitamin A and zinc may help to support not only the integrity of the gastrointestinal mucosal lining but also the immune system, a large component of which we know resides in the gut.

Sleep and Elimination

The intrinsic body clock (SCN – suprachiasmatic nucleus) within the brain that regulates the sleep/wake cycle also regulates other physiological parameters that exhibit circadian rhythmicity, such as kidney function. The kidneys are also an important consideration in detoxification and elimination strategies as they are involved in filtering of the blood, and excretion of waste products and toxins in urine.

Herbs such as buchu and the amino acids glycine and glutamine may help to support kidney function, buchu may also protect against urinary tract infections. Quercetin may protect kidneys from free radical damage and reduce renal inflammation.

References

1. Schibler, U., The daily timing of gene expression and physiology in mammals. *Dialogues Clin Neurosci.*, 2007. 9(3): p. 257-72.
2. Lorton, D., et al., Bidirectional communication between the brain and the immune system: implications for physiological sleep and disorders with disrupted sleep. *Neuroimmunomodulation*, 2006. 13(5-6): p. 357-74.
3. Haack, M., E. Sanchez, and J. Mullington, Elevated inflammatory markers in response to prolonged sleep restriction are associated with increased pain experience in healthy volunteers. *Sleep*, 2007. 30(9): p. 1145-52.
4. Selmi, C., et al., Inflammation and oxidative stress in obstructive sleep apnoea syndrome. *Exp Bio Med*, 2007. 232(11): p. 1409-13.
5. Aschoff, J., The timing of defecation within the sleep-wake cycle of humans during temporal isolation. *J Biol Rhythms*, 1994. 9(1): p. 43-50.