

# Adaptogens :Foundation of Vibrant Health

Adaptability is the measure of life for all plants and animals

# *The Art of life is a constant readjustment to our surroundings.* Kakuzo Okakaura

- ▶ A fundamental principle of life lies in adaptability.
- ▶ Humans are intimately interconnected with their environment and any change (stressors) affects us at all levels.
- ▶ How we respond and adapt to this stressors will be the determining factor in our health and well being.
- ▶ Adaptability requires energy. Dynamic Change = Greater requirement for adaptive energy.



## Hi, I'm Dr Pushpa Chandra

For the past decade, I've been exploring and researching the central role of vital energy in health and performance athletes, and how stress drains our vitality causing premature aging and chronic conditions of health.

This document explains, in simple terms, why adaptogens are important, what benefits they bring and why I include them in my all-natural products for energy, stamina, endurance and vitality: AWAKE and ASLEEP

For more on these products and to purchase them, visit <https://shiftworkershealth.com>

# Adaptogens Rejuvenators and Tonics

- ▶ This elite class of herb imparts strength, energy, stamina, endurance, and improves mental clarity.
- ▶ It also stabilizes physiological processes and promotes homeostasis via several mechanisms of action which are linked to the hypothalamic-pituitary-adrenal (HPA) axis and the regulation of key mediators of the stress response, including cortisol, Molecular chaperones (Hsp 70) nitric oxide and stress-activated protein kinases.
- ▶ Intelligent herbs with bidirectional effect. Grows in most inhospitable areas, including high deserts, cold mountains, dry and barren lands - this is where they develop intelligent compounds to overcome environmental stressors.
- ▶ Why would plants evolve to contain stress-reducing compounds?
  - ▶ According to [ethnobotanist James Duke, PhD](#), plants contain adaptogenic compounds because they have to contend with a good deal of stress themselves. Most of the best adaptogens grow in some of the harshest climates on earth.
- ▶ In many parts of non-Western world, adaptogens are used extensively in high-risk, fast-reflex occupations, from athletes to miners to deep sea divers.

# Eleuthrococcus senticosus (eleuthero)

- ▶ A deciduous shrub, that grows in Siberia and China. The flowers are hermaphrodite (have both male and female organs).
- ▶ Can grow in clay and nutritionally poor soil. pH: acid, neutral and basic (alkaline) soils can tolerate atmospheric pollution.
- ▶ Most widely studied adaptogenic herb and is often referred to as the 'king'.
- ▶ There are more published scientific studies (more than 3,000) on eleuthero than on any other herb in the world.
- ▶ In 1967, Russian astronauts toasted with an eleuthero extract (instead of champagne) after reaching orbit.
- ▶ After the Chernobyl nuclear disaster (in 1986), eleuthero was used to fight the toxic effects of radiation.
- ▶ Eleuthero has both a systemic effect and an impressive immune-enhancing health effect, which contributes to its reputation as the 'King' and top disease-preventative herb.

# Eleuthero

- ▶ Israel Brekhman has said this about eleuthero: “Eleutherococcus is not a panacea, but a necessary agent for virtually all patients.”
- ▶ Initially used by Russian Olympic teams.
- ▶ Does not disrupt drug metabolism pathways. **Can be co administered with drugs.** A recent rat study found no negative interaction between eleuthero and warfarin.
- ▶ Constituents: root contains glycosides, referred to as eleutherosides; **steroidal glycosides.**
- ▶ Eleuthero has the ability to decrease the level of the alarm reaction, **delaying the onset of adrenal exhaustion** (the third phase of Hans Selye’s general adaptation syndrome).
- ▶ Allows a more economical and **efficient release of corticosteroids and adrenaline.** Endocrine effects of eleuthero can be inferred from an increase in the weight of the adrenal cortex, while the simultaneous decrease in the content of cholesterol and ascorbic acid indicates an increased formation of corticosteroids.

## Sources:

A. S. Hovhannisyanyan, H. Abrahamyan, E. S. Gabrielyan, and A. G. Panossian, “The effect of Kan Jang extract on the pharmacokinetics and pharmacodynamics of warfarin in rats,” *Phytomedicine* 13(5) (2006): 318-23.

# Eleuthero

- ▶ Enhances mental acuity and **physical endurance** during work hours and throughout your exercise regime or sport. Improves oxygen uptake by exercising muscles, enabling longer workouts and quicker recovery time.
- ▶ **Anabolic effect**; stimulates protein synthesis in the pancreas, liver, and adrenal cortex.
- ▶ Increases noradrenalin and serotonin for quicker recovery from **acute stress**.
- ▶ Nootropic **learning and memory**.
- ▶ Protects against **environmental pollutants** and radiation.
- ▶ Normalizes **body temperature** - can be used to prevent hypothermia.
- ▶ Regulates **blood-sugar levels** (leaf extract is more effective than the root).
- ▶ Protects the liver and enhances its ability to break down and **eliminate drugs** from the body. Anti-alcoholic.
- ▶ Immune restorative/enhancing agent. Increases the body's ability to **resist infection**; prevents colds and flu, and shortens recovery time.
- ▶ **Anticancer** effects through homeostasis. Decreases the side effects of toxic therapies like chemotherapy and radiation.
- ▶ Strong **antioxidant** against free radicals and antilipid peroxidative activities.
- ▶ Improves **circadian biorhythm**.

# Rhodiola Rosea

- ▶ Legendary history dating back to 77AD. Grows in the arctic regions of Europe and Asia at very high altitudes.
- ▶ Also known as golden root and Arctic Root, the Vikings depended on the herb to enhance their physical and mental strength, and endurance.
- ▶ Stimulating and adaptogenic. Salidroside and Rosavin (Rosavin for standardization of extracts). The adaptogenic properties:
  - ▶ cardiopulmonary protective effects
  - ▶ central nervous system activities have been attributed primarily to its ability to influence levels and activity of bio-genic monoamines such as serotonin, dopamine, and norepinephrine in the cerebral cortex, brain stem, and hypothalamus.
- ▶ It is believed the changes in monoamine levels are due to the inhibition of monoamine degradation and facilitation of neurotransmitter transport within the brain.
- ▶ In addition to these central effects, Rhodiola has been reported to prevent both catecholamine release and subsequent cyclic AMP elevation in the myocardium, and the depletion of adrenal catecholamines induced by acute stress.
- ▶ Rhodiola's adaptogenic activity might also be secondary to induction of opioid peptide biosynthesis and through the activation of both central and peripheral opioid receptors.

# Rhodiola Rosea - Nootropic

- ▶ **Brain tonic** -- Recent studies show that salidroside has neurotrophic and neuroprotective effects...Smart compound.
- ▶ Offer generalized resistance against physical, chemical, and biological stressors in rats and other animals studied. Evidence also suggests cardioprotective and anticancer benefits in animals including antiviral, hepatoprotective, antidiabetic, and antioxidative effects.
- ▶ Study - 58 Physicians given Rhodiola on a night shift for 2 weeks - remarkable cognitive effect. “Darbiniyan V, Kteyan A, Panossian A et al.

Sources:

[Phytomedicine](#). 2014 Sep 25;21(11):1325-48. doi: 10.1016/j.phymed.2014.07.008. Epub 2014 Aug 7

# Rhodiola - Endurance & Longevity

- ▶ In the test of swimming "to the limit," Rhodiola rosea administration increased the swimming time of rats 135-159 percent. Working capacity of the rats consistently improved throughout the supplementation period.
- ▶ Study of the effects of Rhodiola on cardio-vascular performance in 42 professional cross-country skiers, aged 20-25.
  - ▶ Eleuthro and Rhodiola taken 30-60 mins prior to race showed improved work capacity and post race recovery ( heart rate and BP normalization).According to Russian research, Rhodiola increases ATP and Creatine Phosphate.
  - ▶ Finished the race significantly faster then the control group.
  - ▶ A post-race study of blood oxygen saturation in breath interruption tests revealed a better resistance to hypoxia and faster recovery in the skiers.

# Schisandra - Preventative & Life-Enhancing

- ▶ *Journal of Ethnopharmacology.*  
Parnossian A and Wikman G. Pharmacology of Schisandra chinensis Bail: An overview of Russian research and uses in medicine 2008;118:183-212.
- ▶ Increases capacity for physical work, including endurance and accuracy of movement
- ▶ Increases mental performance, Protects against stress from a wide variety of sources. Premium brain tonic
- ▶ Affects the central nervous, sympathetic, endocrine, immune, respiratory, cardiovascular, and gastrointestinal system
- ▶ Like ginkgo, schisandra also optimizes norepinephrine and dopamine levels, increasing the brain's ability to maintain focus and improving mood
- ▶ Affects levels of nitric oxide and cortisol in the blood
- ▶ Improves symptoms of asthenia (lack of strength and energy)

Sources: Lebedev AA. Appraisal of the stimulative action of Schizandra chinensis In: Materials for the Study of the Stimulative and Tonic Actions of Ginseng and Schizandra chinensis; Moscow: Academy of Science of USSR;1995:182---85

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# Eleuthero, Rhodiola and Schisandra

- ▶ Stress protective and Restorative. Active components of rhodiola, schisandra and eleuthero are structurally similar to catecholamines—primary regulators of stress—and other components resembling corticosteroids that help to inactivate a stress response.
- ▶ Rhodiola is the most active of the three substances, taking effect 30 minutes after administration, with beneficial effects lasting for at least 4 hours.
- ▶ Rhodiola improves short-term memory and learning, and increases mental working capacity, efficacy (decreased number of errors) and speed of information processing.
- ▶ Schisandra also improves mental efficacy and increases physical stamina, especially in fatigued subjects. In one study, working capacity was increased by 222% when compared to the control group.
- ▶ A randomized, double-blind, placebo-controlled trial studied the effect of the above three herbs in combination. A single dose of the three herb combination significantly improved the speed and accuracy of cognitive performance and improved attention in healthy people suffering from chronic stress when they performed stressful cognitive tasks.

## Sources:

Aslanyan, G., Amroyan, E., Gabrielyan, E., et al. (2010). Double-blind, placebo-controlled, randomised study of single dose effects of ADAPT-232 on cognitive functions. *Phytomedicine*, 17(7), 494-499.

# Bacopa Monnieri

- ▶ Aurvedic Nootropic, dating 6 AD. Initially used by the sanskrit scholars as an aid for memorizing scripture.
- ▶ Enhances memory, mood, learning ability, and brain health by improving synaptic communication. It enhances the growth and proliferation of dendrites, the “branched” nerve cell extensions along which neural impulses travel, enhancing neural signaling. This improved **neural impulse transmission** is a key to cognitive enhancement.
- ▶ Also increases cerebral blood flow, is neuroprotective and an Anti-oxidant.
- ▶ Bacoside-A is the active ingredient in bacopa monnieri extract.
  - ▶ has been shown to stimulate nerve cells and make synapses more receptive to nerve impulses. It also increases production of the enzyme Tryptophan Hydroxylase (TPH2), which is crucial to a number of central nervous system activities, including the biosynthesis of serotonin.
- ▶ Bacopa is also thought to stimulate activity in the hippocampus by increasing the activity of kinases, proteins that regulate cellular pathways. Because the hippocampus is integrally involved in virtually all cognitive activity, this is believed to be one of the most important ways in which bacopa boosts brain power.

# Withania Somnifera (or Ashwagandha)

- ▶ Most highly acclaimed Ayurvedic adaptogen. Commonly known as “Indian Winter cherry” or “Indian Ginseng.”
- ▶ Traditionally used as an overall health tonic with nervine tonic benefits - energizing the body when it needs it during the day, and calming overactive nerves for easy and restful sleep at night.
- ▶ Ashwagandha is alternately translated as the “strength,” “sweat,” and “smell” of a horse and is compared well with *Eleutherococcus senticosus*.
- ▶ Ashwagandha is one of Ayurveda’s few natural ojas builders, which means it supports vitality, immunity, radiant health and longevity. Among the ayurvedic Rasayana herbs, Ashwagandha holds the most prominent place.
- ▶ It’s used as a Rasayana for its wide ranging health benefits.
  - ▶ Rasayana is described as an herbal preparation that promotes a youthful state of physical and mental health and expands happiness. In Ayurvedic practices, these types of remedies are given to small children as tonics, and are also taken by the middle-aged and elderly to increase longevity.
- ▶ The main chemical constituents are alkaloids and steroidal lactones and withanolides (notably Withaferin A).

# Withania Somnifera - therapeutic uses

- ▶ The available scientific data support the conclusion that Ashwagandha is a **nervine** and potent regenerative tonic (Rasayana of Ayurveda), due to its multiple pharmacological actions like:
  - ▶ anti-stress, neuroprotective, antitumor, anti-arthritic, analgesic and anti-inflammatory etc. It is useful for different types of diseases like Parkinson, dementia, memory loss and stress induced diseases.
- ▶ Nervine - Ashwagandha induced a calming anxiolytic effect that was comparable to the drug Lorazepam.
- ▶ Stamina, Endurance (better swim time in rats)
- ▶ Adjunct to standard chemo for breast cancer patients (fatigue related to chemo).
- ▶ Exhibits an antidepressant effect, comparable with that induced by imipramine.
- ▶ Analgesic that soothes nervous system from pain response ([Twajj et al., 1989](#)). The powerful anti-arthritic properties ([Singh et al. 1984, 1986](#)) of Ashwagandha are now widely accepted and documented.
- ▶ Can drink alcohol with Withania.
- ▶ Safe with children.

## Sources:

Mishra LC, Singh BB, Dagenais S. Scientific basis for the therapeutic use of Withania somnifera. (Ashwagandha): A review. *Alternative Medicine Reviews*. 2000;5:334-346. [[PubMed](#)]

# Melatonin

- ▶ Melatonin (N-acetyl-5-methoxy-triptamine) was first isolated in 1958 from the bovine pineal gland by Lerner et al.
- ▶ When melatonin was first isolated, it was considered as an exclusive sleep hormone secreted by the pineal gland; however, over the last few years, we've discovered that the GI tract, retina, and immune system also produce melatonin.
- ▶ Its molecular mechanisms involve several actions:
  - ▶ experiments at the National Institute For Research On Aging (INRCA) in Ancona, Italy have demonstrated that melatonin can counteract the atrophy of the thymus gland to restore the organ's youthful ability to generate mature T-cells.
  - ▶ It has also been shown that melatonin increases interleukin-2 (IL-2) production and improves the effectiveness of natural killer cells -- two important components of the immune system.
- ▶ Among the mechanisms of action proposed for melatonin's immune-boosting effects have been that:
  - ▶ 1. Melatonin has a direct stimulatory effect on immune system tissues;
  - ▶ 2. Melatonin affects immune function indirectly through its effects on thyroid-stimulating-hormone;
  - ▶ 3. Melatonin influences zinc metabolism, which, in turn, plays a major role in strengthening immune function.

# Melatonin- Antiaging molecule

## Neuroprotective Benefits

Melatonin is a powerful and versatile antioxidant

- ▶ Melatonin is a powerful and versatile antioxidant produced within the body. Melatonin protects both lipids and proteins against damage, and can scavenge some of the most dangerous free radicals in the body—including hydroxyl radicals and hydrogen peroxide.
- ▶ Many studies show that melatonin's antioxidant properties prevents the shortening of telomeres.
- ▶ Unlike other antioxidants, melatonin easily diffuses into all cells, and even crosses the blood-brain barrier to protect the delicate brain.

Sources:

Dean, Ward M.D. "Melatonin: Unique, Potent Life Extending Nutrient." Vitamin Research News: Anti-Aging Supplement Review and Update Part 3 August 2004 p.14.

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  - ▶ “The influence of Eleutherococcus on muscle work capacity”; and G. S. Kelly, “Sports nutrition: A review of selected nutritional supplements for endurance athletes,” *Alternative Medicine Review* 2(4) (1997): 282-95.
  - ▶ Todorov, “Mechanism of antistress and anabolic action”; and Blokhin, “The influence of Eleutherococcus root and leaf extract. Wagner, et al., “Plant adaptogens.” Kupin, et al.,
  - ▶ “Stimulation of the immunological reactivity of cancer patients”; and Ben-Hur and Fulder, “Effect of *P. ginseng* saponins and Eleutherococcus.” Brekhman and Kirillov, “Effect of Eleutherococcus on alarm-phase of stress.” Blokhin, “The influence of Eleutherococcus root and leaf extract.”
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  2. A. S. Hovhannisyan, H. Abrahamyan, E. S. Gabrielyan, and A. G. Panossian, “The effect of Kan Jang extract on the pharmacokinetics and pharmacodynamics of warfarin in rats,” *Phytomedicine* 13(5) (2006): 318-23