



**Understanding
Adaptogens and Nervines:
Adrenal Health and Supporting a
Healthy Stress Response**

Richard Mandelbaum RH
richardmandelbaum.com
arborvitaeny.com

*All images in this presentation are either the author's or used under a
Creative Commons license*

MILK VETCH (HUANG QI)

Astragalus membranaceus

Fabaceae (bean family) – East Asia

Parts used: Roots

A sweet tonic herb that is understood to assist the immune system. In China it has been combined with other herbs in traditional medicine for many centuries and the roots are used in *congee* (rice porridge), soups, teas and wines.

Some herbalists consider it adaptogenic – meaning that it helps the body cope with stress, anxiety and fatigue.



What is an Adaptogen?

Coined in 1947 by N.V. Lazarev

ADAPT: to change your behavior so that it is easier to live in a particular place or situation; to change (something) so that it functions better or is better suited for a purpose (merriam-webster.com)

plus

-GEN: a substance that generates or produces

What is an Adaptogen?

Adaptogens increase non-specific resilience to stressors and reestablishment of our intrinsic physical, mental, and emotional adaptive capacity

All adaptogens:

- Are non-toxic
- Produce a non-specific response
- Have a modulating, normalizing, or regulating effect (typically in particular on the Nervous/ Endocrine/ Immune complex; i.e. H-P-A axis and SAS/sympatho-adrenal system*)

Major Recognized Adaptogens

- Asian ginseng
- American ginseng
- Eleutherococcus
(Siberian ginseng)
- Licorice
- Reishi
- Tulsi / holy basil
- Ashwagandha
- Cordyceps
- Dang Shen (Codonopsis)
- Schisandra
- Rhodiola
- Sarsaparilla (Smilax)
- He shou wu*
- Goji / Lycium
- Prince Root (Pseudostellaria)
- Devil's Club
- Astragalus (mild)

Asian Ginseng

Panax ginseng



American Ginseng

Panax quinquefolius



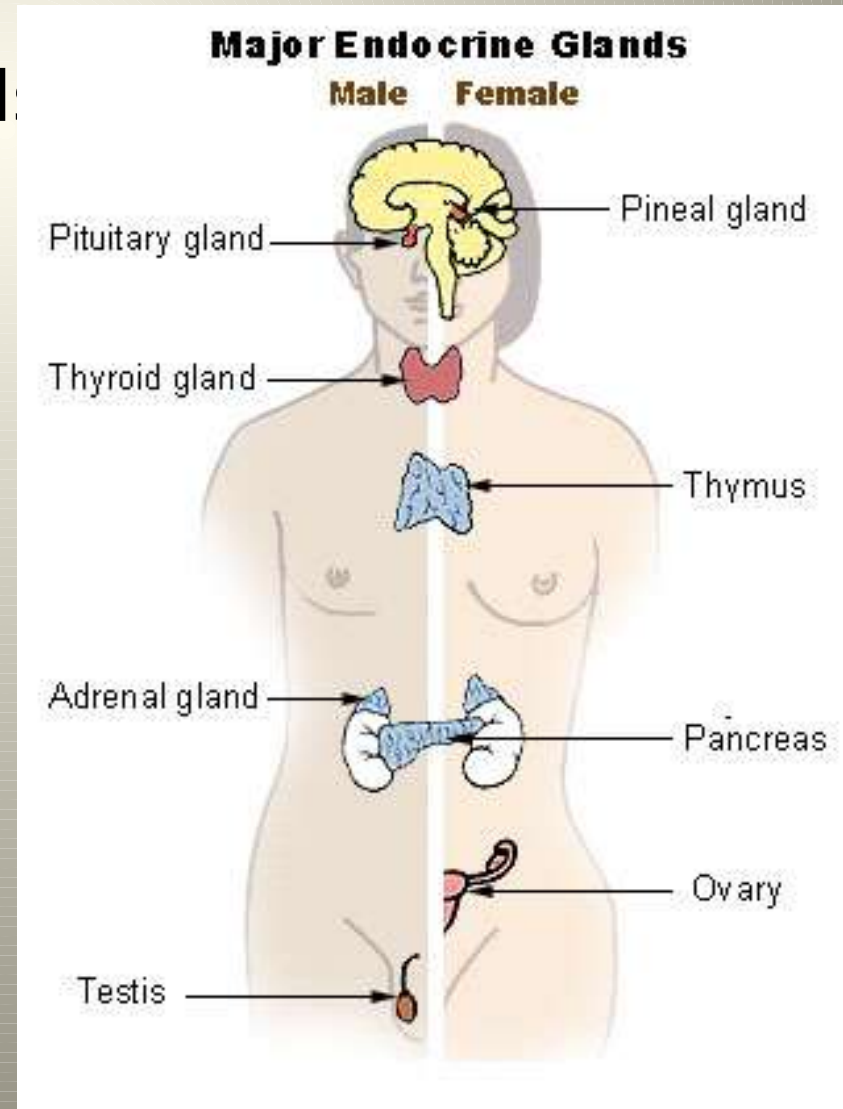
What do Adaptogens Address?

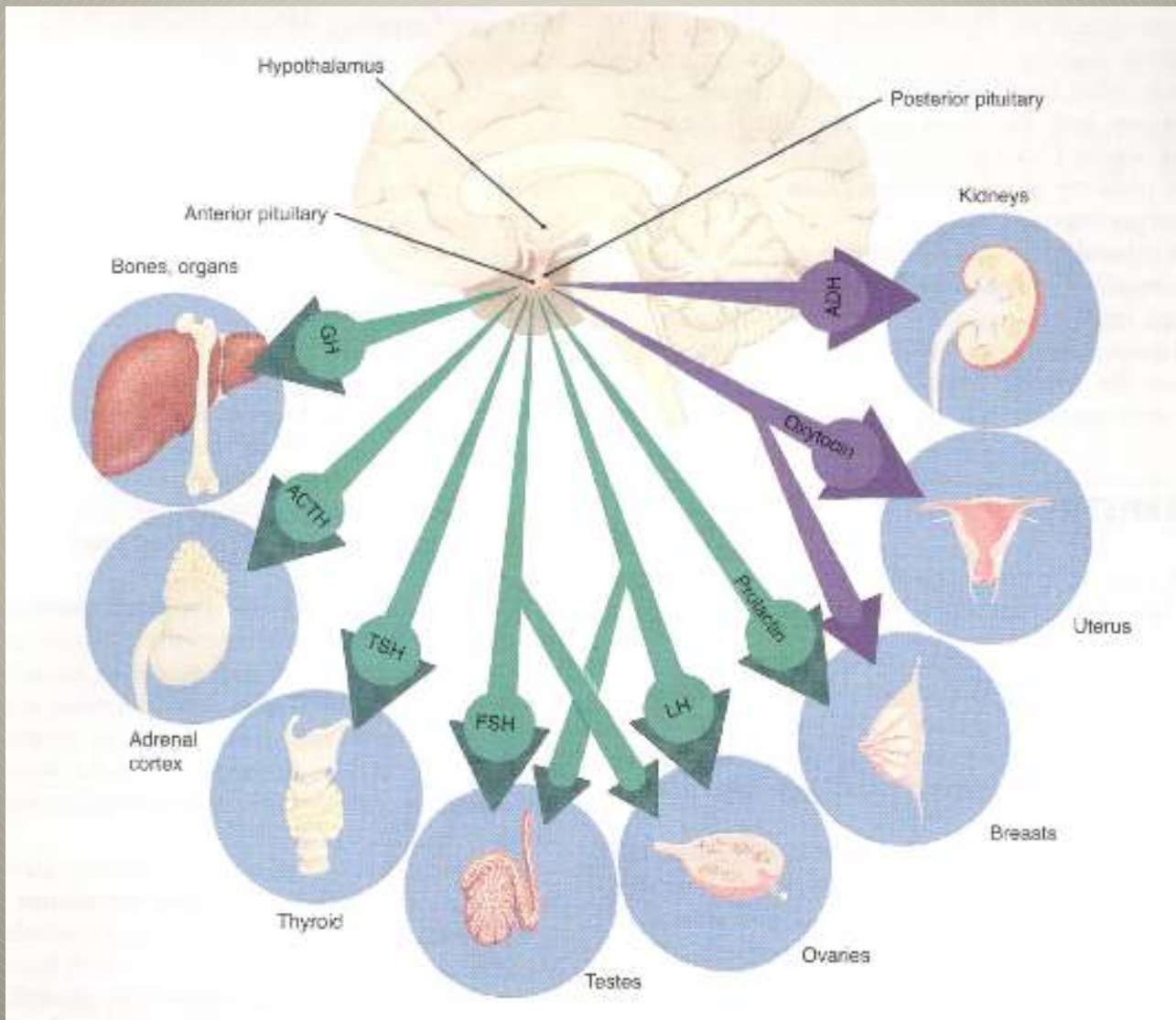
- **Adrenal and autonomic dysregulation**
 - **An imbalance in the homeostatic functioning of the H-P-A Axis and the Yin / Yang of the Parasympathetic versus Sympathetic States**

Components of the Endocrine System

Primary endocrine glands:

- (Hypothalamus)
- Pituitary
- Pineal
- Thyroid
- Parathyroid
- Thymus
- Adrenal cortex and medulla
- Pancreas
- Gonads

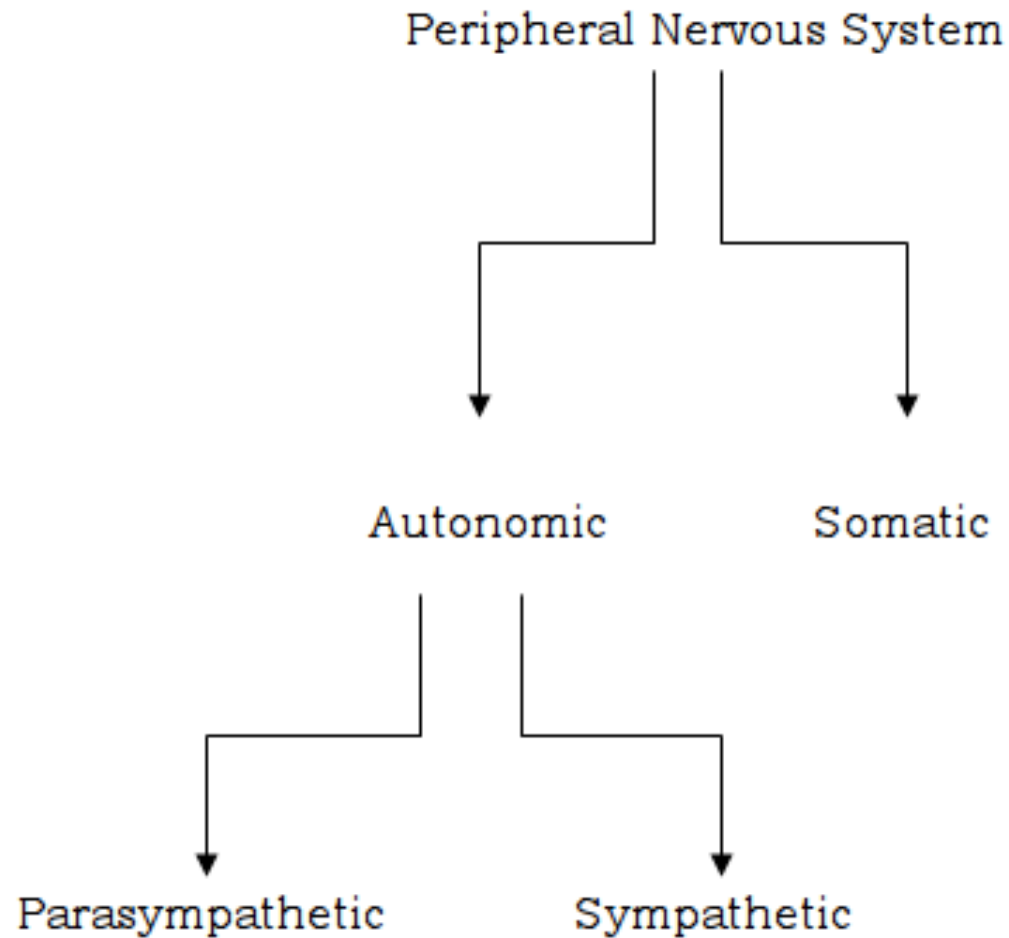




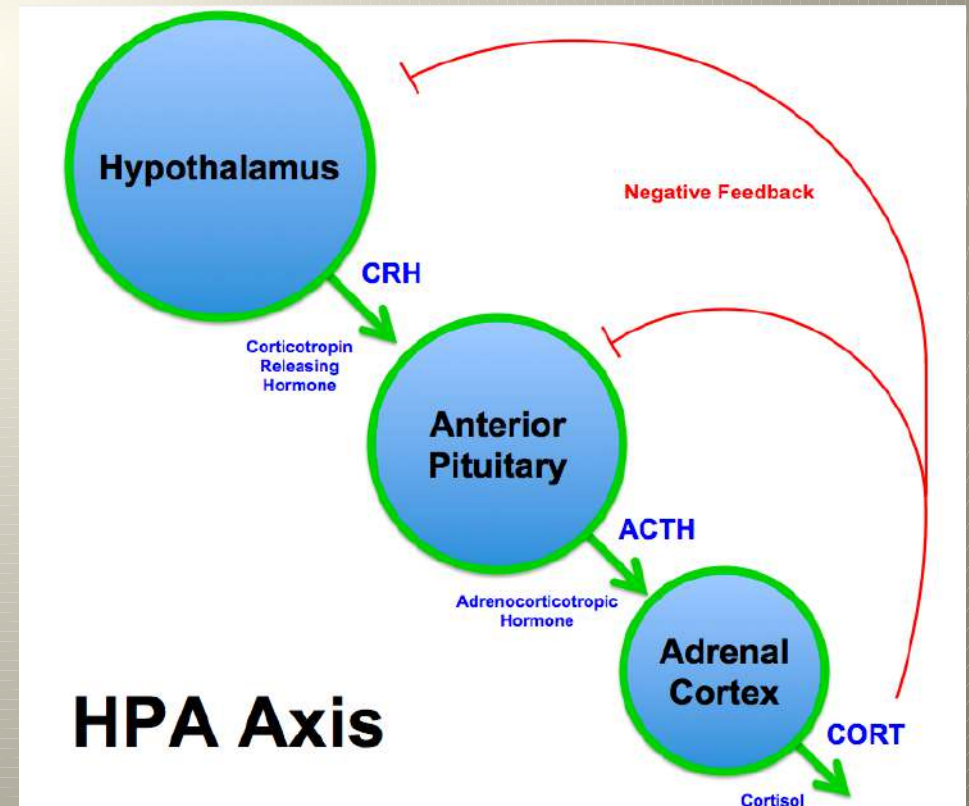
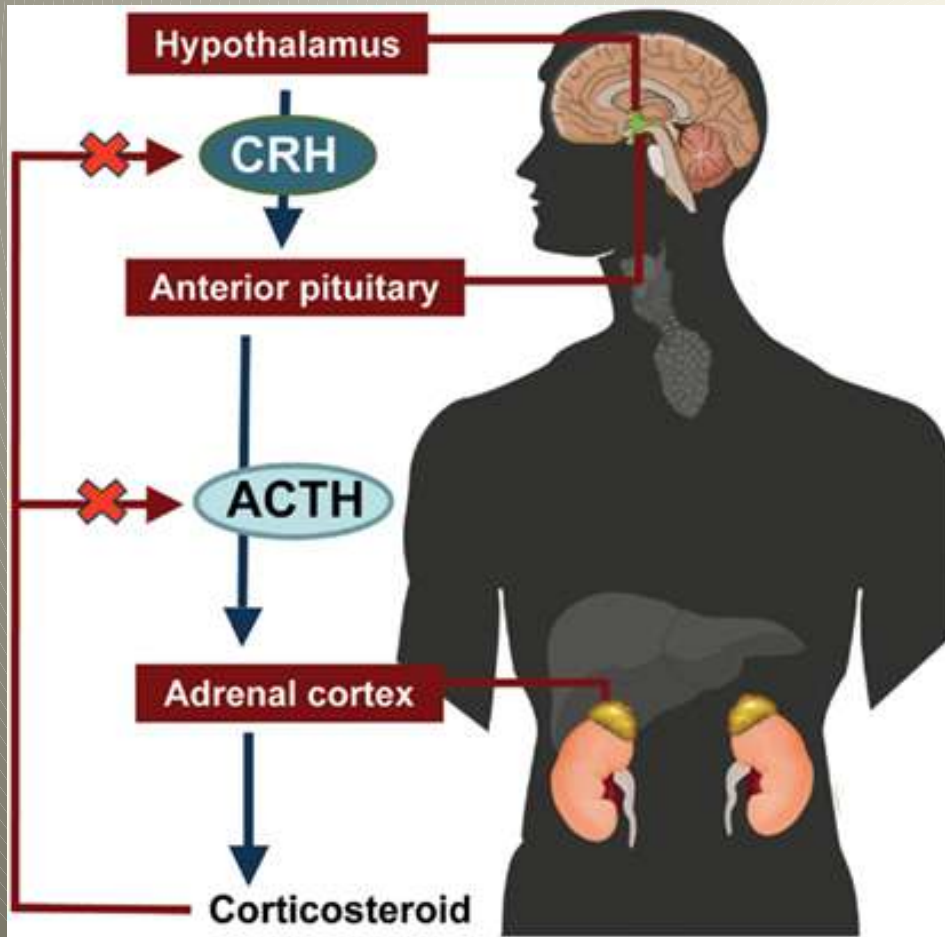
Pituitary Hormones

Scanlon, Sanders, Essentials of Anatomy and Physiology, Fifth Edition

Autonomic Nervous System



Hypothalamus-Pituitary-Adrenal Axis



What is H-P-A Dysregulation?

A loss in generalized endocrine and nervous system adrenal resiliency

Stress - Adrenal Fatigue → Adrenal Exhaustion

- Hans Selye's *General Adaptation Syndrome* (*Alarm - Adaptation - Exhaustion*)
- Bruce McEwen's *Allostatic Load*

The Stress Response, *oversimplified as “Fight or Flight”*

- Anxiety, insomnia and/or poor sleep quality
- Fatigue
- Cognitive impairment
- Suppressed/ dysregulated immune activity
- Inhibited digestion and absorption / GI imbalances
- Bladder and kidney complaints
- Increased blood pressure and risk of atherosclerosis
- Increased blood clotting
- Increased blood glucose levels and risk of hyperinsulinemia / insulin resistance
- Reduced bone/cartilage production
- Slower wound healing
- Diminished / impaired sexual and reproductive function and altered hormonal levels

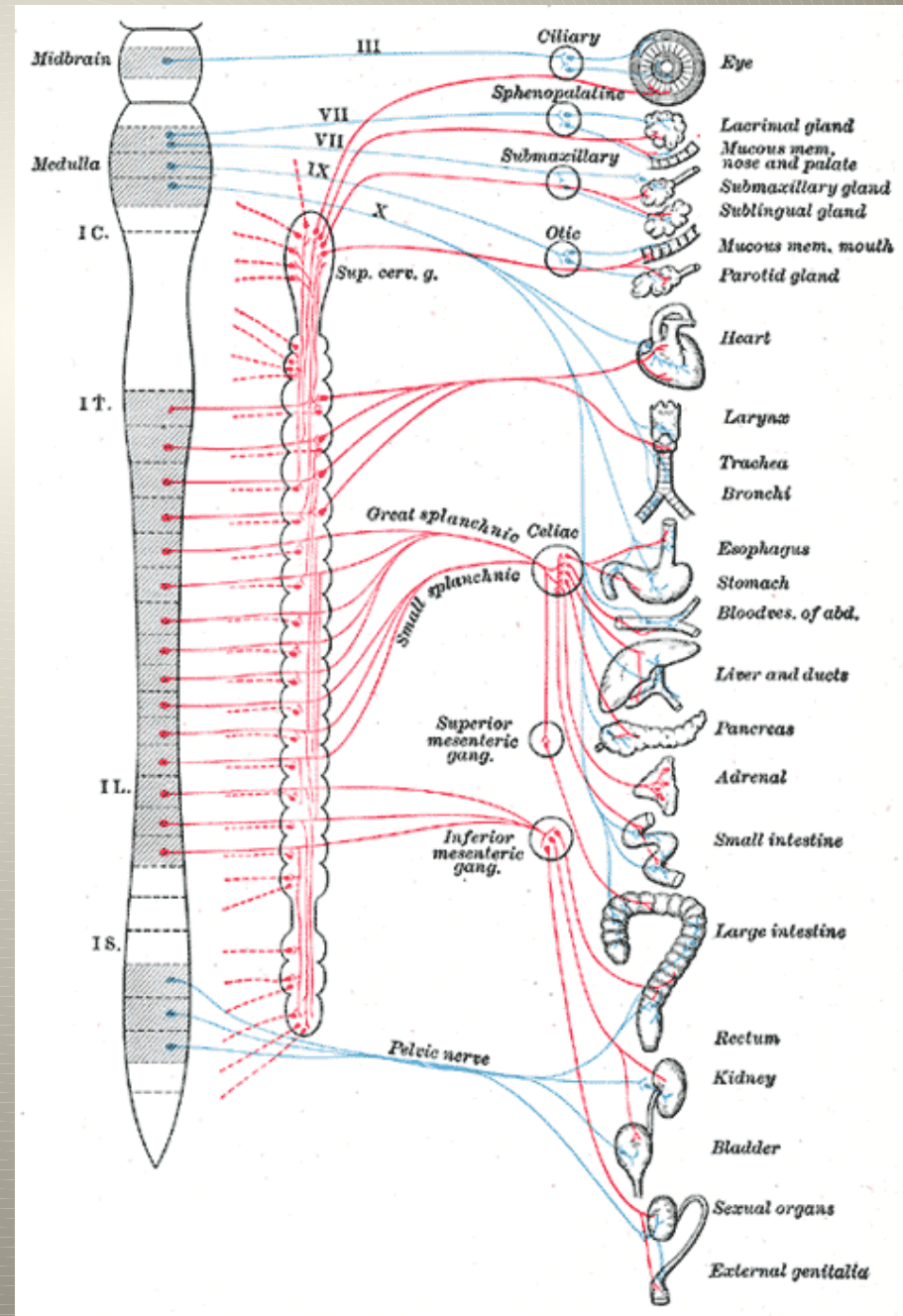
Rhodiola
Rhodiola rosea



Over-harvested in the wild; use sparingly and only cultivated plants from sustainable sources should be used!! If a substitute will work, use it instead.

What is *Your*
Response to
Stress?

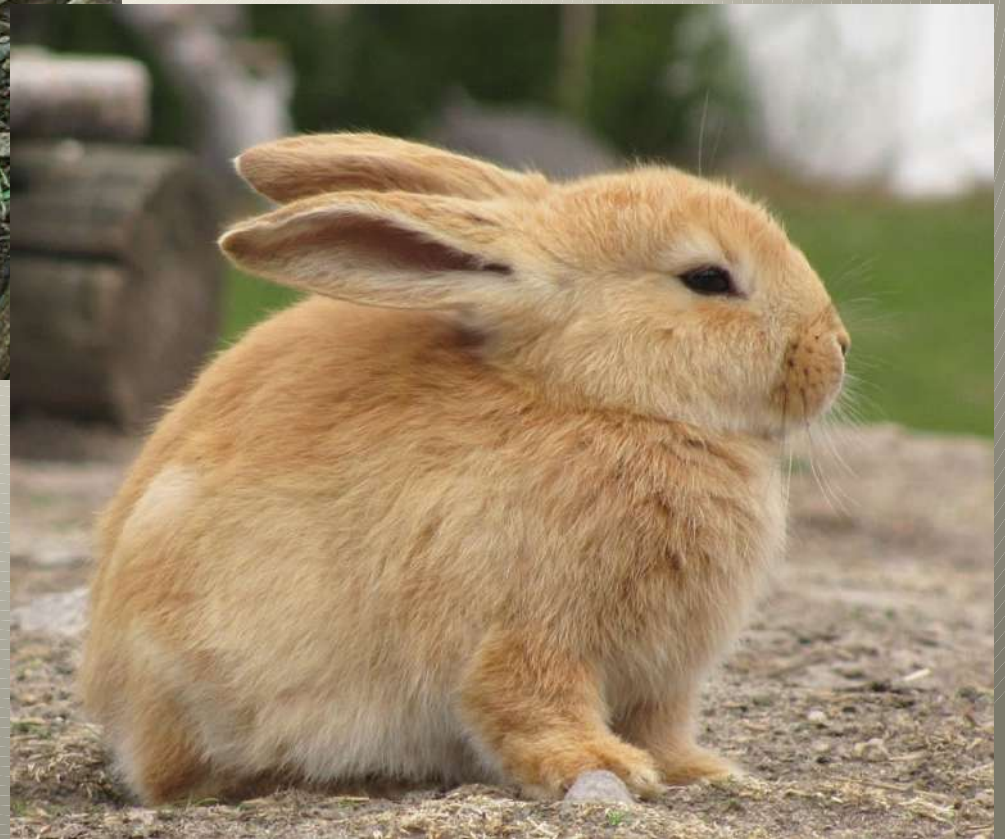
*Eustress vs.
distress*



Fight ~~or Flight~~ *No Retreat, No Surrender*

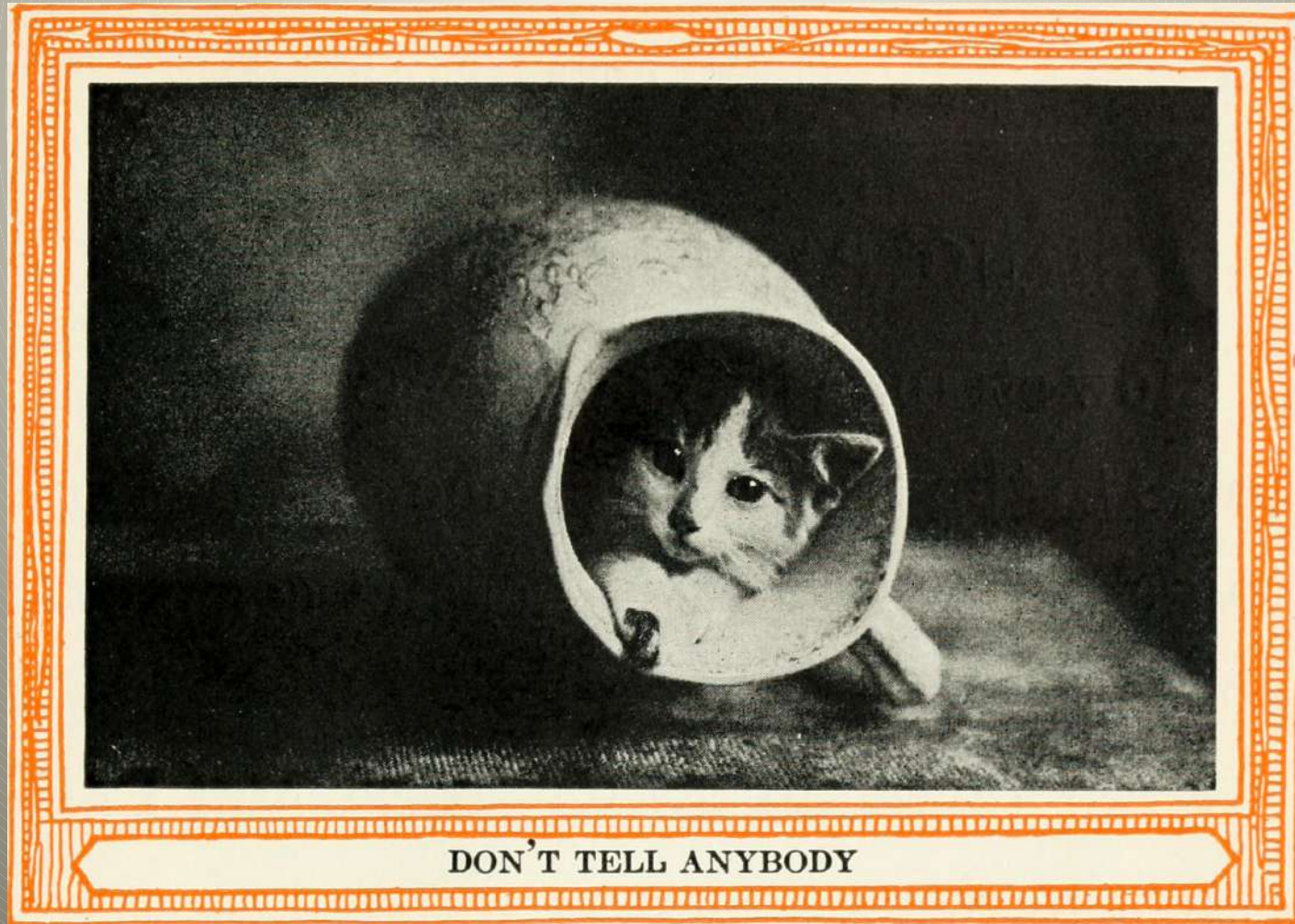


Fight, Flight, or FAINT



Fight, Flight, or HIDE

Grover, Eulalie Osgood, Kittens and cats; a book of tales, 1911



Fight, Flight, or HAVE SEX



Fight, Flight, or VOMIT



~~Fight, Flight~~ BE PREPARED



Fight, Flight, or Acquiesce and Feel Depressed



Fight, Flight, or Close Your Eyes, Pretend the Problem Doesn't Exist and Maybe You Will Get Lucky and It Will Go Away



Contributing factors to H-P-A and SAS disequilibrium

- Sleep: quantity and quality
- Other disease: heart disease, cancer, immuno-deficient disorders, thyroid disease (especially hypo), diabetes, chronic pain, etc.
- Lack of adequate physical activity
- Food allergies
- Toxic overload (pesticides, heavy metals)
- Alcohol, tobacco, drug abuse
- Nutritional deficiencies and microbiome
 - Specific: Omega 3 fatty acids (esp. EPA), possibly Vitamin C, Calcium
 - Probiotics

The Crucial Nature of Sleep

- Average hours per night dropping steadily: from 9-10 to 6 -7 currently
- Sleep deprivation or poor sleep quality is a form of chronic stress – same health effects
- Exacerbating factors often overlooked: lights and backlit screens such (t.v., computers, tablets), insufficient exercise
- Differentiate between:
 - Deficiency insomnia – yin insomnia
 - Excess insomnia – yang insomnia
- Naps are good (for most)!
- Interrupted sleep has no inherent negative effects, and may be natural for some (evolutionary advantage)

Ashwagandha

Withania somnifera



Nervine herbs to assist sleep and sleep quality

Valerian

Valeriana officinalis



California poppy

Eschscholzia californica



Nervine: Blue vervain
Verbena hastata



***What is the Most Powerful
Adaptogen?***

Mindfulness

***A detachment from the fruits of
our actions***

*Relinquishing the fruit of action, the disciplined man
attains perfect peace, the undisciplined man is in bondage,
attached to the fruit of his desire.*

Bhagavad Gita, Fifth Teaching verse 11,
trans. Barbara Stoler Miller, Bantam, 1986

Holy Basil (Tulsi)

Ocimum sanctum

O. tenuifolium



Hey Boss, You Don't Want Your Employees to Meditate

By Kathleen D. Vohs and Andrew C. Hafenbrack

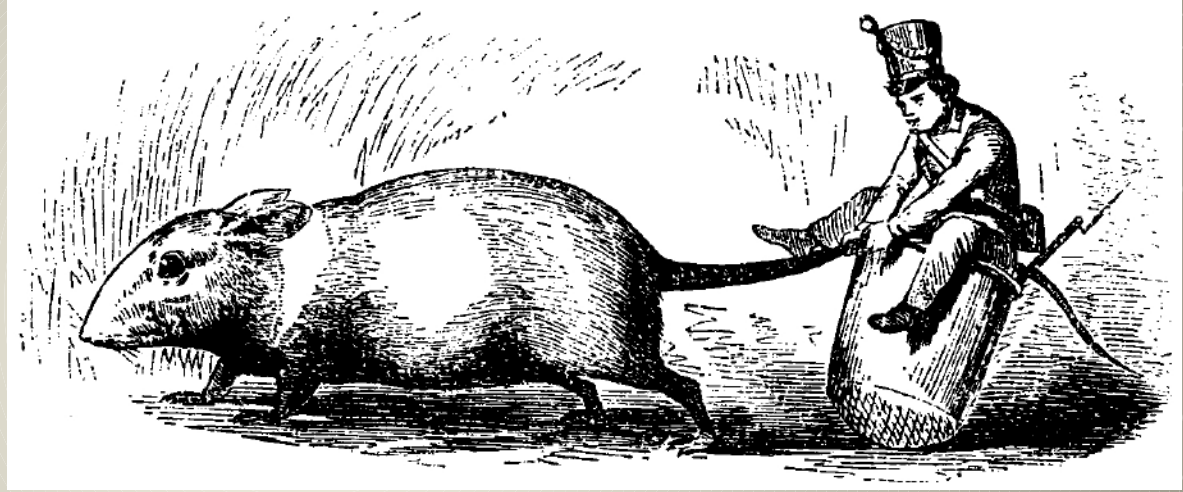
Dr. Vohs and Dr. Hafenbrack are behavioral scientists.

-NY Times Opinion piece, June 14, 2018, by study's authors

Hafenbrack, Vos, Mindfulness Meditation Impairs Task Motivation but Not Performance, Organizational Behavior and Human Decision Processes [Volume 147](#), July 2018, Pages 1-15

*Maybe the authors and experts
are not getting it?*

“Among those who had meditated, motivation levels were lower on average. Those people didn’t feel as much like working on the assignments, nor did they want to spend as much time or effort to complete them. Meditation was correlated with reduced thoughts about the future and **greater feelings of calm and serenity — states seemingly not conducive to wanting to tackle a work project.**”



*Only a rat can win a rat
race*

Michael Franti

Four Pillars of Health



- Fulfillment, Love, and Joy
- Physical Activity
- Sleep
- Healthy Food and Gut Health

Recognizing our Biological
Self

***To bring your anger to a halt,
there is nothing better than
poetry***

***To cast off worry there is nothing
better than music***

*The Nei-yeh (Inward Training)
Anonymous - Mid 4th Century BCE
trans. Harold Roth*

Is Tonic a Synonym for Adaptogen?

Not always.

Tonic can literally mean “toning” – strengthening the smooth muscle of an organ or organ system

Tonic can mean trophorestorative – reestablishing a specific organ’s optimal function

Nervines

- “Calming herbs that are mildly relaxing without the overtly suppressant effects of sedatives” – Winston and Maimes
- “Relaxants that ease anxiety and tension by soothing both body and mind” – Hoffmann

Nervine: Fresh milky oats
Avena sativa



Nervine: Skullcap
Scutellaria lateriflora



Other Prominent Nervines:

(clockwise) motherwort, St. Johns wort, kava, lavender





*This kind of situation
does not call for
freaking out.*

-Grover

Phytochemistry and Pharmacology of Adaptogens

- Keep in mind there is still much to be learned – there is more we don't know than we do know!

That said, adaptogens appear to:

- Have an antioxidant impact in the body, neutralizing free radicals and reducing free radical damage from cellular metabolism and oxidative stress caused by pollution, diet, and emotional stressors. This is despite not necessarily having much significant antioxidant content.
- Serve as an H-P-A “inoculation”, inducing in the body a micro-stress response that slowly enables the autonomic nervous system to re-learn how to respond in a more balanced way.
- Retrain the stress response like exercising a muscle.

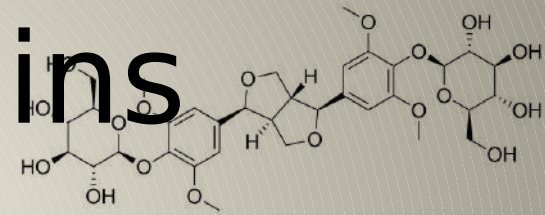
Phytochemistry and Pharmacology of Adaptogens

The constituents most responsible for adaptogenic activity, bearing in mind the synergy of whole plant chemistry, are:

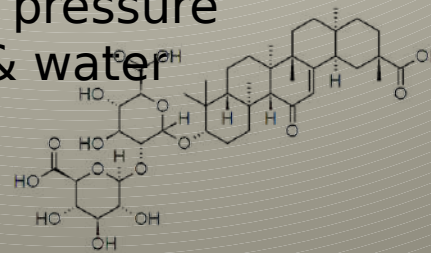
- Polysaccharides: supporting immune, liver health; antioxidant, anticancer activity
- Triterpenoids / steroidal saponin glycosides (e.g. eleutherosides, ginesenosides, withanolides): supporting nervous and endocrine health

In other cases other classes of phytochemicals, such as potentially adaptogenic lignans (Schisandra) and alkaloids (Withania), have been identified.

Adaptogenic Saponins



- Phytosterols and other saponins
- Eleutherosides (shown): triterpenoid saponins
- Ginsenosides/quinquenosides: steroidal saponins in *Panax ginseng* & *P. quinquefolius*
- Withanolides: steroidal lactones
- Glycyrrhizin (shown) in licorice: anti-inflammatory, inhibits deactivation of cortisol, immune nourishing, antihepatotoxic, antiviral
 - Responsible for raising blood pressure w/excess ingestion (sodium & water retention)



Licorice

Glycyrrhiza glabra, *G. uralensis*



Eleuthero / Siberian ginseng

Eleutherococcus senticosus



Select the appropriate adaptogen(s), and formulate well for medium to long term use
examples: Inula (L), Atractylodes(R)



Four Categories of Tonic in Chinese Tradition

- Qi tonic
- Blood tonic
- Yin tonic
- Yang tonic

“Three Treasures” of Chinese Tradition

- Qi (Vital Flowing Energy)
- Jing (Essence)
- Shen (Mind)



Reishi

Ganoderma lucidum

Ganoderma spp.



“Kidney Adaptogens” and “Spleen Adaptogens”

- Some adaptogens nourish Kidney Qi and Essence
- Some adaptogens nourish Spleen Qi
- Most nourish and support both but might predominately nourish one more than the other

- Kidney adaptogens: Panax, Lycium, Schisandra, Cordyceps, Ganoderma, Withania, Polygonum*
- Spleen adaptogens: Panax, Glycyrrhiza, Codonopsis, Astragalus, Eleutherococcus

He shou wu

Polygonum multiflorum



**Potentially harmful stilbenes in
Polygonum multiflorum (he shou wu)
especially when not properly prepared**

“...the contents of characteristic compounds in raw *P. multiflorum* were changed after processing: the content of 2,3,4,5-tetrahydroxystilbene 2-O-beta-D-glucoside was decreased by 55.8%...Thus, processing should reduce the toxicity of *P. multiflorum*.”

Dong, et al., *Eighteen cases of liver injury following ingestion of Polygonum multiflorum*, *Complementary Therapies in Medicine* (2014) 22, 70—74

Cordyceps
dong chong xia cao
Cordyceps sinensis



Schisandra

Schisandra chinensis



Sarsaparilla

Smilax regelii, *S. ornata*,
S. glabra, *S. china*,
S. officinalis, *S. bona-nox*



Resources

Winston, D. and Maimes, S., Adaptogens, Healing Arts Press, 2019

Yance, D., Adaptogens in Medical Herbalism, Healing Arts Press, 2013

Panossian et al., March 2020, Evolution of the adaptogenic concept from traditional use to medical systems, *Med Res Rev.* 2020;1-74.

Bibliography

- Chandrasekhar K, Kapoor J, Anishetty S. A prospective, randomized double-blind, placebo-controlled study of safety and efficacy of a high-concentration full-spectrum extract of Ashwagandha root in reducing stress and anxiety in adults. *Indian J Psychol Med* 2012;34:255-62
- Hoffmann, D., *Medical Herbalism*, Bear & Co, 2003
- Ishaque S, Shamseer L, Bukutu C, Vohra S. Rhodiola rosea for physical and mental fatigue: a systematic review. *BMC Complement Altern Med*. 2012 May 29;12:70. doi: 10.1186/1472-6882-12-70.
- Kelly GS, Rhodiola rosea: a possible plant adaptogen. *Altern Med Rev*. 2001 Jun;6(3):293-302.
- Kelly, GS, Nutritional and botanical interventions to assist with the adaptation to stress. *Altern Med Rev*. 1999 Aug;4(4):249-65.
- Panossian A, Wikman G, Kaur P and Asea A (2012) Adaptogens stimulate neuropeptide Y and Hsp72 expression and release in neuroglia cells. *Front. Neurosci*. 6:6. doi: 10.3389/fnins.2012.00006 - See more at: http://www.frontiersin.org/Neuroendocrine_Science/10.3389/fnins.2012.00006/abstract#sthash.IODVJma8.dpuf

Bibliography

- Panossian, A.; Wagner, H. (October 2005). "Stimulating effect of adaptogens: An overview with particular reference to their efficacy following single dose administration". *Phytotherapy Research* 19 (10): 819–838.
- Panossian, A.; Wikman, G. (September 2009). "Evidence-based efficacy of adaptogens in fatigue, and molecular mechanisms related to their stress-protective activity". *Current Clinical Pharmacology* 4 (3): 198–219.
- Smith, Ed, *Therapeutic Herb Manual*, 2011
- Winston, D. and Maimes, S., *Adaptogens*, Healing Arts Press, 2007
- Winston, D. and Kuhn, M, *Herbal Therapy and Supplements*, 2nd Ed., Lippincott Williams and Williams, 2008
- Yance, D., *Adaptogens in Medical Herbalism*, Healing Arts Press, 2013

A painting of a flowering branch, likely a cherry blossom, set against a teal background. The branch is dark brown and gnarled, with numerous small, light-colored flowers in various stages of bloom. The background is a textured, mottled teal color.

Thank you!

richardmandelbaum.com
arborvitaeny.com