INTEGRATIVE
NEUROENDOCRINE™

CORTIVIVE™
ADRENAL RESPONSE FORMULA

An important part of the neuroendocrine system, the adrenal glands are triangle-shaped glands located above the kidneys that are responsible for releasing hormones in response to stress. The adrenal glands produce a number of hormones including corticosteroids,(such as cortisol) and catecholamines, (such as epinephrine, adrenaline and norepinephrine.)

Stress can challenge the body's coping mechanisms and result in fatigue (sometimes referred to as "adrenal fatigue" or "adrenal burnout"). Supporting adrenal gland health with targeted supplementation can help the body respond more adaptively during periods of stress.*

Stress Hormone Synthesis

CortiVive is designed to support adrenal function for healthy cortisol production.* The formula provides extracts of licorice, eleuthero, and forskolin-standardized coleus. It also includes vitamin C and B vitamins, including active forms of B2 and B6, as these essential vitamins can be depleted by stress, and as a result, they are critical to healthy adrenal gland function.*

CortiVive:

- Is a unique, vegetarian formulation.
- Offers flexible dosing to meeting individual patient needs.
- Combats stress-related fatigue and promotes energy recovery.*
- Includes ingredients to support healthy adrenal function.*

wheat free | GF gluten free | soy free | dairy free | vegetarian

*THESE STATEMENTS HAVE NOT BEEN EVALUATED BY THE FOOD AND DRUG ADMINISTRATION. THESE PRODUCTS ARE NOT INTENDED TO DIAGNOSE, TREAT, CURE, OR PREVENT ANY DISEASE.

CORTIVIVE™

Background

Cortisol, widely described as the "stress hormone," is produced by the adrenal cortex in response to physical or psychological stress. The adrenals are small triangular-shaped organs that sit atop the kidneys. These small but vital glands serve as an extension of the sympathetic nervous system, which mobilizes the body's fight or flight response to stress.[1] During periods of stress, cortisol influences blood pressure and blood sugar, as well as digestive function and the immune response. This allows the body to deal with acute stressors and then restore homeostasis.

Description

CortiVive is designed to support adrenal function for healthy cortisol production.* This unique, vegetarian formula combines effective amounts of adrenal-supportive botanicals including licorice, eleuthero, and forskolin- standardized coleus extracts with essential vitamins that can be depleted by stress.*

How It Works

The body is adapted to quickly recover from stress. When the stress response lasts longer than a few minutes, it can challenge the body's coping mechanisms. As a result, frequent stress may lead to fatigue (sometimes called "adrenal burnout"). CortiVive has been formulated to replenish the adrenals for healthy cortisol production and to support a normal healthy stress response and recovery.*

The following chart summarizes the benefits of each ingredient in CortiVive:

Beneficial Ingredients

Ingredient	Benefit
Coleus *(Coleus forskohlii)* root extract	Several *in vitro* studies have shown that forskolin-standardized coleus extracts support pituitary ACTH production and steroidogenic gene transcription in human adrenal cells.*[2,3] Although there are no human clinical trials demonstrating this effect, *in vitro* experiments suggest that forskolin promotes cortisol production in human adrenocortical cells.*[2-4]
Eleuthero *(Eleutherococcus senticosu)* root extract	Eleuthero is an herbal extract known to elicit adaptogenic benefits, reducing fatigue and helping the body cope during periods of stress.*[5] Although it has not been demonstrated in human clinical studies, animal research suggests that eleuthero may support healthy cortisol production.*[6-8]
Licorice *(Glycyrrhiza glabra)* root and rhizome extract	Licorice extracts have been shown to influence cortisol production in both animals and humans by inhibiting 11beta-hydroxysteroid dehydrogenase, the enzyme responsible for converting cortisol to cortisone.*[9-11] In one study, supplementing with licorice extract increased saliva cortisol levels in healthy women.*[12] Although human clinical trials have not been done to date, *in vitro* studies have also found that glycyrrhizinic acid enhances the synthesis of cortisol in human cells.*
Vitamin B5 (Pantothenic acid)	Vitamin B5 (pantothenic acid) is involved in numerous biological reactions, including the production of energy and the synthesis of steroid hormones, including cortisol.*[13] Vitamin B5 is required for normal function of the adrenal cortex.*[14] Animal studies suggest that pantothenic acid and its derivatives support adrenal cortex function as well as adrenal response to ACTH stimulation.*[14,15]
Vitamin B1 (Thiamine)	Vitamin B1 (thiamine) is a water-soluble, sulfur-containing member of the B vitamins. The coenzyme form of thiamine plays a role in energy production.*[16]
Vitamin B2 (Riboflavin)	Riboflavin, or vitamin B2, is a readily absorbed micronutrient required for a wide variety of cellular functions.* It is necessary for energy production as well as normal cell function and growth.*[17] Animal research shows that a riboflavin deficiency leads to an initial increase, followed by a decrease, in adrenal cortex activity.*[18]
Vitamin B6 (Pyridoxine)	Vitamin B6 is a cofactor for more than 50 different enzymes. In recent years, vitamin B6 has become a focus of research describing the compound's critical function in cellular metabolism and stress response.*[19] It also plays a key role in the action of steroid hormones.[20]
Vitamin C	The adrenal glands accumulate over 100 times the level of vitamin C than that found in blood plasma.[21] As a cofactor in both catecholamine biosynthesis and adrenal steroidogenesis, animal studies confirm that vitamin C is crucial for both the adrenal cortex as well as the adrenal medulla.*[22]

Supplement Facts

Serving Size 2 capsules — Servings per container 60

Amount per 2 capsules		%DV**
Vitamin C (ascorbic acid)	60 mg	100 %
Thiamin (as thiamin HCl) (vitamin B1)	3 mg	200 %
Riboflavin (as riboflavin-5'-phosphate and riboflavin)	3.4 mg	200 %
Vitamin B6 (as pyridoxal-5'-phosphate and pyridoxine HCl)	6 mg	300 %
Pantothenic Acid (as calcium D-pantothenate)	150 mg	1,500 mg
Proprietary Blend: Eleuthero (*Eleutherococcus senticosus*) Root Extract standardized to contain 0.8% eleutherosides, Licorice (*Glycyrrhiza glabra*) Root and Rhizome Extract and *Coleus forskohlii* Root Extract standardized to contain 20% forskolin (10 mg)	350 mg	**

**Daily Value not established.

Other ingredients: vegetable capsule (modified cellulose), cellulose, ascorbyl palmitate, and silicon dioxide.

Recommendations: Take 2 capsules one to two times daily, or as recommended by your healthcare professional.

If pregnant, nursing, or taking prescription drugs, consult your healthcare professional prior to use.

Contains No: sugar, salt, yeast, wheat, gluten, soy, dairy products, artificial coloring, artificial flavoring, preservatives, or ingredients of animal origin.

Integrative Therapeutics 120 CT - 10303

References

1. Ioachimescu, Adriana G. and Hamrahian Amir H. Anatomy and Physiology of the Adrenal Glands. Chapter 47: Diseases of the Adrenal Glands. Carey WD and Hoogwerf BJ (eds). *Cleaveland Clinic 2009 Current Clinical Medicine.* Philadelphia: Saunders. 2009. Web Site: Expert Consult. 8 Dec 2013.
2. Asif AR, Ljubojevic M, Sabolic I, Shnitsar V, Metten M, Anzai N, Müller GA, Burckhart G, Hagos Y. Regulation of steroid hormone biosynthesis enzymes and organic anion transporters by forskolin and DHEA-S treatment in adrenocortical cells. *Am J Physiol Endocrinol Metab.* 2006; 291(6):E1351–-9.
3. Kau MM, Wang JR, Tsai SC, Yu CH, Wang PS. Inhibitory effect of bufalin and cinobufagin on steroidogenesis via the activation of ERK in human adrenocortical cells. *Br J Pharmacol.* 2012;165(6):1868–76.
4. Cobb VJ, Williams BC, Mason JI, Walker SW. Direct stimulation of cortisol secretion from the human NCI H295 adrenocortical cell line by vasoactive intestinal polypeptide. *J Hypertens.* 1997;15(12 Pt 2):1735–8.
5. Li C, Wang XY, Hu XW, Fang HT, Qiao SY. Determination of eleutheroside B in antifatigue fraction of *Acanthopanax senticosus* by HPLC. *Zhongguo Zhong Yao Za Zhi.* 2008;33(23):2800–2.
6. Winterhoff H. Effects of Eleutherococcus senticosus on the pituitary-adrenal system of rats. *Pharmaceutical and Pharmacological Letters.* 1993;3:95–8.
7. Kimura Y, Sumiyoshi M. Effects of various Eleutherococcus senticosus cortex on swimming time, natural killer activity, and corticosterone level in forced swimming stressed mice. *J Ethnopharm.* 2004;95:447–53.
8. Gaffney BT, Hügel HM, Rich PA. The effects of Eleutheroccocus senticosus and Panax ginseng on steroidal hormone indices of stress and lymphocyte subset numbers in endurance athletes. *Life Sci.* 2001;70(4):431–42.
9. Asl MN, Hosseinzadeh H. Review of pharmacological effects of Glycyrrhiza sp. and its bioactive compounds. *Phytother Res.* 2008;22(6):709–24.
10. Isbrucker RA, Burdock GA. Risk and safety assessment on the consumption of Licorice root (Glycyrrhiza sp.), its extract and powder as a food ingredient, with emphasis on the pharmacology and toxicology of glycyrrhizin. *Regul Toxicol Pharmacol.* 2006;46(3):167–92.
11. Methlie P, Husebuye EE, Hustad S, Lien EA, Løvås K. Grapefruit juice and licorice increase cortisol availability in patients with Addison's disease. *Eur J Endocrinol.* 2011;165(5):761–9.
12. Al-Dujaili EA, Kenyon CJ, Nicol MR, Mason JI. Liquorice and glycyrrhetinic acid increase DHEA and deoxycorticosterone levels in vivo and in vitro by inhibiting adrenal SULT2A1 activity. *Mol Cell Endrocrinol.* 2011;336(1–2):102–9.
13. Tahiliani AG, Beinlich CJ. Pantothenic acid in health and disease. Vitam Horm. 1991;46:165–228.
14. Jaroenporn S, Yamamoto T, Itabashi A. Effects of pantothenic acid supplementation on adrenal steroid secretion from male rats. *Biol Pharm Bull.* 2008;31(6):1205–8.
15. Tarasov IA, Sheĭseenok AG. Adrenal cortex functional activity in pantothenate deficiency and the administration of the vitamin or its derivatives. *Vopr Pitan.* 1985.(4):51–4.
16. Gaby AR.Thiamine. In: Gaby AR. *Nutritional Medicine.* Concord, Fritz, Perlberg Publishing, 2011:62–66.
17. [No author listed]. Riboflavin and adrenal cortex. *Nutr Rev.* 1973;31(3):95–6.
18. Gaby AR. Riboflavin. In: Gaby AR. *Nutritional Medicine.* Concord, Fritz, Perlberg Publishing, 2011:66–68.
19. Mooney S, Leuendorf JE, Hendrickson C, Hellmann H. Vitamin B6: A long-known compound of surprising complexity. *Molecules.* 2009;14(1):329–51.
20. Gaby AR. Vitamin B6. In: Gaby AR. *Nutritional Medicine.* Concord, Fritz, Perlberg Publishing, 2011:80–87.
21. Hediger MA. "New view at C". *Nat. Med.* 2002;8(5):445–6.
22. Patak P, Willenberg HS, Bornstein SR. Vitamin C is an important cofactor for both adrenal cortex and adrenal medulla. *Endocr Res.* 2004;30(4):871–5