Adrenal C Formula®
Formulated by Dr. James L. Wilson

The Stress-Smart Complete Vitamin C*
Not all vitamin Cs are created equal

Adrenal C Formula® is specifically formulated to meet the increased demand for vitamin C created by stress and adrenal fatigue.* It provides ascorbic acid reacted with minerals essential to the adrenal hormone cascade.* These chelated mineral ascorbates deliver bioavailable vitamin C in a buffered form to minimize gastric irritation and avoid increasing systemic acidity associated with stress and adrenal fatigue.* In addition, this formula combines bioflavonoids in a 1:2 ratio with vitamin C to enhance its biological and antioxidant activity, and help counter oxidative damage that increases during stress.* An innovative sustained-release design is integrated throughout each caplet to slow down absorption and avoid rapid excretion by the kidneys so that sufficient tissue saturation can be reached for optimal utilization.* This synergistic formula works uniquely in the following ways:*

**Optimizes biological activity of vitamin C without excess acidity***

**Vitamin C**
- Nutrients delivered via sustained release integrated throughout the caplet, not just on the surface, releasing gradually over several hours to minimize gastrointestinal distress and avoid plasma levels in excess of renal threshold that can cause rapid excretion into urine. 1, 2
- Slow and steady delivery prevents sudden release of large quantities of ascorbic acid into circulation — critical because stress and adrenal dysfunction can diminish capacity to efficiently regulate serum acid-base balance. 3, 4
- Contains optimal dosage of vitamin C for absorption based on megadosing studies. 5
- Combined into mineral ascorbates and bioflavonoids for increased buffering, absorption, and bioavailability. 6, 7

**Minerals**
- Potassium and magnesium buffer vitamin C acidity and reduce digestive tract irritation. 7

**Citrus Bioflavonoids**
- Bioflavonoids increase effective absorption and biological activity of ascorbic acid. 6
- Supplementation with flavonoid-rich orange peels increased ascorbic acid concentration in the adrenals, spleen and leucocytes in guinea pigs that, like humans, are unable to synthesize vitamin C. 8

**Supports the adrenal glands, nervous system and immune system during stress***

**Vitamin C**
- Found to be critical for healthy functioning of the adrenal glands, which along with the pituitary and leucocytes contain some of the highest levels of vitamin C in the human body. 9, 10, 11, 12
- Ascorbic acid and zinc are crucial to optimal immune system functioning, including lymphocyte development and proliferation, maintenance of thymus, and antimicrobial and natural killer cell activity. 13, 14, 15
- Stress is shown to deplete vitamin C, yet because the human body has limited vitamin C storage capacity and cannot synthesize it, a steady intake is necessary. 2, 13, 16
- ACTH increased adrenal vein but not systemic vitamin C in humans, showing that local elevation of vitamin C concentration in adrenals is integral to the stress response. 17
- Vitamin C supplementation of 1500 mg attenuated increases in circulating cortisol and adrenaline in response to prolonged exercise. 18
- Ascorbic acid helped normalize depressive-like behavioral and biochemical alterations induced by chronic stress. 17, 18, 19

**Magnesium, zinc, copper, manganese, sodium, potassium**
- Required by adrenal hormone cascade, nervous system, and most cells throughout body for proper stress response energy, production and vitamin C utilization, as well as healthy metabolic functioning. 20, 21, 22, 23
- Manganese and magnesium directly increase adrenal enzymatic activity. 21
- Magnesium shown to control activity of hypothalamic-pituitary-adrenal axis. 24
- Zinc and copper shown to directly affect neurotransmitters and expressed mood, and cellular zinc content varies with stress and stress hormone levels. 25, 26, 27, 28
- Copper shown to be important in maintaining adequate synaptic function in neuronal cells and to induce a biphasic effect on neurotransmission depending on concentration and duration of exposure. 29
- Manganese and magnesium enhanced macrophage viability (important in both innate and adaptive immunity). 30
- Regulation of ACTH release is controlled by a potassium-dependent channel. 31
Protects against increased oxidative damage and nutrient depletion during stress*  

Vitamin C  
- Increased antioxidant activity in the hypothalamus and adrenals with no increase in damaging lipid peroxidation in adrenals  
- Moderate exercise-induced oxidative stress  
- Shown to have positive effects on blood sugar balance, lipid parameters, and immune and cardiovascular tissue health  
- Demonstrated to suppress oxidative stress-induced Tissue Factor (TF) expression in human coronary artery endothelial cells  

Citrus Bioflavonoids  
- Demonstrated to enhance bioavailability of ascorbic acid and slow its absorption  
- Shown to moderate reactive oxygen species generation and oxidative stress  
- Significantly increased ascorbic acid concentration in adrenal glands in guinea pigs, who, like humans, cannot manufacture their own  

Suggested Use  
- During adrenal fatigue and stress: Take 1 caplet 3-6 times a day (1 upon rising, 1 at noon and 1 before bed; 1 additional caplet may be taken up to 3 times throughout the day, if desired). For more information see Dr. Wilson’s Program for Adrenal Fatigue.  
- As a complete vitamin C daily supplement: Take 1 to 2 caplets daily.  
- As a pragmatic way to minimize the effects of stress: Take 1 caplet 2 to 3 times a day.  

Companion Products Formulated by Dr. Wilson  

Adrenal Fatigue: Adrenal C Formula is one of the four products in Dr. Wilson’s Program for Adrenal Fatigue along with Adrenal Rebuilder®, Herbal Adrenal Support Formula® and Super Adrenal Stress Formula®  

Metabolic Stress: Good Sugar®, Herbal HPA®, Super Adrenal Stress Formula®  

Immune Enhancement: Nat-Stim®, Blister-Free Forever™ and Body-Guard®  

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References  

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