

INNATE

RESPONSE FORMULAS®

Antioxidants

V i s m e d i c a t r i x n a t u r a e

Product Rationale

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ANTIOXIDANTS RATIONALE

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Antioxidants from Innate Response Formulas® was crafted to provide comprehensive antioxidant and free radical scavenging support for all the systems of the body. Antioxidants are substances that inhibit the oxidation of our cells from toxins such as free radicals. The toxins can be from the natural digestion and metabolism of foods, alcohol, nicotine from cigarette smoke, environmental factors, OTC drugs such as Acetaminophen, (Tylenol®) prescription drugs, preservatives, etc. Antioxidant nutrients and phyto-nutrients work on many levels through numerous pathways of the body. Some antioxidants work in the aqueous environments of the body, such as the blood, others protect the lipids of the cell membranes, other's act as free radical scavengers sacrificing themselves to protect cells and or other essential nutrients. Some antioxidants provide the first line of defensive, often called "preventative inhibitors" which block the initiators of free radical attack. Other antioxidants, such as Vitamin E and Vitamin C, neutralize or convert free radicals into less active, stable products thus breaking the chain reaction [1]. Protective antioxidants such as glutathione function as part of the body's detoxifying mechanisms, defending the liver while neutralizing damaging substances. Included in this formula are the key antioxidant vitamins, minerals and phyto-nutrients that function with glutathione and other protective enzyme systems, assisting in salvaging oxidized antioxidants enabling them to continue to be of benefit. *Antioxidants* provides a unique alliance of antioxidant vitamins, minerals, phyto-nutrients and whole extracted herbs that supports the vital antioxidant pathways.

FOODSTATE® NUTRIENTS

Beta Carotene

Beta-carotene is called Provitamin A and is converted to vitamin A as needed by the body. Vitamin A is vital to proper vision, health skin and to the health and integrity of all mucus membranes. Carotenoids have protective antioxidant properties and work as free radical scavengers. Beta-carotene functions as a "preventative inhibitor" that assists the body in handling singlet oxygen molecules.

Food Sources: liver, chili peppers, sweet potatoes, carrots, spinach, dried Apricots, collard greens, kale, mangoes, cantaloupe, alfalfa, barley grass, Hydrilla, green, orange, red, yellow vegetables.

Vitamin C

Vitamin C provides antioxidant protection through being an electron donor. Vitamin E can use this electron to recycle itself when oxidized. Vitamin C's electrons are used in several enzymes and as a chemical reducing agent in many intracellular and extracellular reactions. Vitamin C is also important in its role as a "chain breaking" antioxidant [1]. Plays a primary role in collagen production. Critical to the performance of the immune and nervous systems, and to proper adrenal function. Plays supportive role for pituitary, organelles of the cells including neutrophils, lymphocytes, monocytes, platelets, fibroblasts, osteoblasts, cells of the liver, spleen, brain, kidneys, testes, and ovaries. Promotes wound healing, and red blood cell formation. Plays a vital role in both protein and calcium metabolism. As we age the sex glands develop a greater need for C and will draw it from other tissues, leaving these tissues vulnerable. The entire vitamin C complex works together with ascorbic acid acting as a free radical scavenger, which protects the rest of the complex.

Food Sources: chili peppers, sweet potatoes, carrots, spinach, dried apricots, collard greens, kale, mangoes, cantaloupe, alfalfa, barley grass, Hydrilla, green, orange, red, yellow vegetables.

Bioflavonoids:

By combining FoodState vitamin C complex with bioflavonoids, the complete C complex is supplied.

Nature's biological response modifiers, bioflavonoids have the ability to modify the body's reaction to allergens, viruses and carcinogens. They are important for the strengthening of capillaries and veins. Research has shown them to be anti-inflammatory, liver protective, anti-tumor, antimicrobial, antioxidant, and antiviral. Bioflavonoids are supportive to the immune system, and strengthening to the entire cardiovascular system and urinary tract. They also have an estrogenic effect. Regular use of bioflavonoids and bioflavonoid rich herbs helps with many of the symptoms of menopause. Bioflavonoids include rutin, hesperidin, quercitrin, and naringin.

Food Sources: citrus fruit, berries, grapes

Vitamin E

Primary function is that of cellular antioxidant, protecting lipids from peroxidation. About 90% of the vitamin E stored in the body is located in the adipose tissue. Vitamin E (nick named the "chain breaking antioxidant") will donate one of its electrons to a free radical to stop a free radical chain reaction.

Natural vitamin E's shape enables it to fit perfectly in between the phospholipids of the cell membrane, standing guard until needed. It neutralizes free radicals and can be recycled and reused with the assistance of other antioxidants such as vitamin C and glutathione. Vitamin E is also important in its role as a "chain breaking" antioxidant [1]. Stimulates and supports proper immune response. Important to immune function and to cardiovascular health.

Food Sources: polyunsaturated fats in vegetable and seed oils, seeds, nuts, and whole grains.

Selenium

Primary function is as a component of the vital antioxidant enzyme, glutathione peroxidase. There are many glutathione peroxidases working with different cells and in both Phase I and Phase II liver detoxifying systems. Selenium is a vital component. Selenium works with vitamin E to prevent the lipid peroxidation (free radical damage) to cells. Research indicates selenium deficiency may potentiate the mutation of virus', including hepatitis and retrovirus' such as HIV.

Food Sources: wheat germ, brazil nuts, yeast, oats, red swiss chard.

Zinc

Zinc plays a vital function in many of the enzyme systems of the body. Important to immune function, wound healing, sexual function, sensory performance, SOD production and health of the skin. Zinc provides nutritional support to the T cells, white blood cells and thymic hormones, thymulin in particular. Deficiency appears to reduce production of T & B lymphocyte cells. Zinc has exhibited anti-viral properties. Most critical trace mineral for male reproduction affecting testosterone levels, sperm count, sperm motility and prostate function and health. An important non-enzyme function is enabling the transcription factor to bind with DNA and stimulate transcription of a gene. Zinc deficiency appears "to disrupt the function of insulin-like growth factor, the factor that mediates the cellular effects of growth hormone."

Food Sources: oysters, pumpkin seeds, ginger root, seafood, brazil nuts, legumes, whole grains.

ADVANCED ANTIOXIDANT FACTORS

Grape Seed Extract and Grape Skin Extract

Grape seed and grape skin extracts are important sources of health supportive phyto-nutrients including the phenolic compounds, flavonols, flavonoids and especially the proanthocyanins. Proanthocyanins (PCOS), have demonstrated a wide range of pharmacological activity. They support intracellular levels of vitamin C, decrease capillary permeability, act as powerful antioxidants and function as free radical scavengers. Proanthocyanins help protect collagen which is responsible for maintaining the integrity of the skin, blood vessels, ligaments, tendons and cartilage. Play a role in managing inflammation and allergic responses. The antioxidant activity of proanthocyanins is approximately 50 times greater than that of vitamin C and E. This protective flavonoid has the ability to function within cell membranes and is one of the few known free radical scavengers to protect against both fat and water soluble free radi-

icals. As an antioxidant these proanthocyanins can trap hydroxyl, lipid peroxides and other damaging free radicals. May also stimulate cells to produce detoxifying enzymes, most notably glutathione peroxidase. Proanthocyanins have shown to regenerate reduced glutathione from oxidized glutathione. Useful to support vision and cardiovascular health.

TONIC WHOLE HERB EXTRACTS

Turmeric Root 10:1 (*Curcuma longa*)

A powerful liver protector and antioxidant, research illustrates that this potent antioxidant herb has greater antioxidant activity than the vitamin's beta-carotene, vitamin C or vitamin E. Principle active constituents are the curcuminoids: curcumin, demethoxycurcumin, and bisdemethoxycurcumin. Recognized for their antioxidant, anti-inflammatory, anti-carcinogenic, antihepatotoxic, anti-viral, antibacterial, anti-tumor and anti-mutagenic properties. Research indicates that these constituents act as cardiotonics, supporting the cardiovascular system, including the reduction of cholesterol and the inhibition of platelet aggregation. Turmeric, a carminative herb, encourages the production of beneficial microflora in the intestines. Recognized for protection of DNA and indicated as important for those undergoing chemotherapy.

Eleuteuro Root 5:1 (*Zingiber officinale*)

Traditionally known as the delivery herb, enhancing the effectiveness of other herbs and increasing nutrient bioavailability. Research indicates ginger is a digestive aid rich in proteolytic enzyme activity that increases bile production. A powerful antioxidant with adaptogenic properties. Aids peripheral circulation and is balancing to the prostaglandins, important in menopause, PMS, arthritis, cardiovascular disease, inflammation. COX-2 inhibitor with benefits to the inflammatory responses of the body. Thought to be an aphrodisiac.

Siberian Ginseng Root 5:1

This primary adaptogen, supports the body's stress response, immune system and endocrine system including the adrenal glands, spleen, liver and thymus gland. Research demonstrates a beneficial effect on modulation of blood pressure and cholesterol levels. Supports the nervous system and mental functions, while also assisting with depression. An effective antioxidant herb possessing, greater antioxidant activity than the vitamins C and E. The subject of numerous studies, this rejuvenative herb is revered internationally for enhancing longevity, improving general health, stamina, oxygen metabolism and memory. Key constituents are called eleutherosides. Research exhibits its radio-protective properties. Supports adjustment to high altitudes and athletic performance. A superior tonic, with the greatest benefits experienced after continuous use.

Rosemary Leaf 4:1(*Rosemarinus officinalis*)

This powerful antioxidant spice has been used to help preserve foods for centuries. A useful antioxidant and general tonic for both the cardiovascular and the nervous systems. Carnosol and ursolic acid are the major constituents of Rosemary being researched for their role in tumor inhibition. The *diterpenoids* are the components shown to possess antioxidant activity. Provides liver support, anti-bacterial and anti-fungal activity. Rosemary is thought to improve mental clarity and uplift the spirit. Contains several supportive flavonoids.

Milk Thistle Seed 4:1 (*Silybum marianum*, *Carduus marianum*)

Traditionally used as a liver tonic and antihepatotoxic. Extensive research demonstrates that Silymarin, as primary constituent in Milk Thistle is a powerful liver protector, antioxidant and free radical scavenger. It can inhibit factors that can cause liver damage including free radicals and leukotrienes. The Silymarin and related factors in Milk Thistle prevent the depletion of glutathione caused by alcohol and other toxins which the livers detoxification pathways must handle. Supports gall bladder and bile flow. Indicated as useful for regeneration of liver tissue. Whole plant grown as a vegetable in Europe. Useful for many disorders of the liver and as key liver protector.

[leukotrienes: products of eicosanoid metabolism (usually arachidonic acid) which play a role in inflam-

mation and allergic reactions.]

Ginkgo Leaf 8:1 (*Ginkgo biloba* L.)

Research shows powerful antioxidant activity and support of memory. An important medicinal plant for circulation and the cardiovascular system. Research indicates beneficial for depression, increases cerebral vascular circulation, peripheral vascular insufficiency, vascular fragility, and impotence. Ginkgo is a free radical scavenger that stimulates the immune system, has anti-inflammatory properties and inhibits histamine release. Rich in flavone glycosides.

Schizandra Fruit 4:1 *Schizandra chinensis*

Considered a primary superior tonic herb in traditional Chinese medicine. This important antihepatotoxic (liver protector), aids in liver tissue regeneration and is useful in many liver disorders including hepatitis. Supports the body's natural resistance. Provides powerful antioxidant activity shown to be more potent than antioxidant vitamins. It strengthens the reflexes and nervous system. Containing all five tastes (sweet, sour, salty, bitter and acrid) it is a wonderful digestive tonic. Revered as a sexual tonic for women and men, supporting sexual fluids and stamina. Schizandra supports general vitality and is a rejuvenative to the kidneys and liver. Calms the spirit, useful for memory and insomnia. Strengthens reflexes and supports the nervous system. This revered adaptogen enhances athletic performance, increases work and exercise capacity, mental capacity and supports the body's response to stress.

Kudzu Root 10:1 (*Pueraria lobata*), Ge-Gen

Considered a mild tonic that assists in replenishing body fluids. Traditionally used as a food in China, it is a rich source of isoflavones, including daidzein, daidzin, and puerarin. Isoflavones' functions include inhibition of enzymes that encourage the development of tumors. Isoflavones deter angiogenesis. Useful for high blood pressure with potent antioxidant activity reported to be up to 100 times that of vitamin E. Traditionally employed to treat alcoholism, it appears to alter the activity of alcohol detoxification enzymes. It particularly effects the speed at which alcohol dehydrogenase converts alcohol into aldehydes, resulting in a lower tolerance for alcohol. The constituent puerarin has been shown to decrease elevated blood pressure in animal studies. Kudzu is an antioxidant weed, plentiful, and non-GMO altered.

Superior Foods

***Hydrilla verticillata* 50:1** A fresh water rooted algae, especially rich in calcium, with abundant trace minerals, polysaccharides, amino acids, micro and macro nutrients. Antioxidant and detoxifying activity.

Barley Grass Juice Concentrate (*Hordium vulgare*)

Highly nutritious green food naturally rich in Chlorophyll, Beta-Carotene, magnesium, iron, SOD, B-Complex, calcium, sulfur, trace minerals and amino acids.

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