

Promotes the production of glutathione, an important antioxidant in the body

RxBalance™ HM Dtox protects the body from oxidative damage due to toxic metal exposure in the environment and promotes the production of glutathione. The primary goal of this product is to safely eliminate toxins (especially heavy metals) from the body through optimizing nutrient support for efficient detoxification. This product also contains potent antioxidants that neutralize the damaging effects of ROS (reactive oxygen species) generated by heavy metals. During times of environmental stress, ROS can increase dramatically and can result in significant damage to cell structures.

Ingredients: Medicinal

Each capsule contains:

Chlorella (<i>Chlorella pyrenoidosa</i>) whole plant	250 mg
N-Acetyl L-Cysteine	200 mg
DL-Alpha lipoic acid	80 mg
R-Alpha lipoic acid	20 mg
Magnesium (glycinate, malate)	30 mg
Selenium (L-selenomethionine)	25 mcg

Ingredients: Non-medicinal

Hypromellose, stearic acid, silicon dioxide.

This product does not contain corn, dairy, egg, gluten, shellfish, soy, sulfites, animal derivatives or artificial colours, flavours or preservatives.

Recommended Use

Promotes the production of glutathione, an important anti-oxidant in the body. A factor in the maintenance of good health.

Recommended Dose

Adults take 2 capsules twice daily. Consult a health care practitioner for use beyond four weeks.

Risk Information

Consult a health care practitioner prior to use if you are taking any medication or undergoing chemotherapy. Do not use if pregnant or breastfeeding.

Dosage Form Description

Clear vegetable cellulose capsule with green powder fill.

Packaging

Available in bottles of 120 vegetable capsules.

Stability

Shelf life of three years if stored in a cool, dry place.

Interactions with Drugs/Supplements

If you take aminoglycoside antibiotics, bisphosphonates, calcium channel blockers, potassium-sparing diuretics, quinolone antibiotics, skeletal muscle relaxants, tetracycline antibiotics, HMG-CoA reductase inhibitors ("statins"), immunosuppressants, warfarin (coumadin), nitroglycerin, antidiabetes drugs, or chemotherapy^{1,2,3,4,5,6} consult a health care practitioner prior to use.

Ingredient Description

Chlorella is an alga which is rich in valuable nutrients such as chlorophyll, antioxidants, vitamins and minerals, and is used as a food supplement and source of nutrients, including protein, nucleic acids, fiber, vitamins, and minerals. It has also been shown to possess detoxification activities, as well as the ability to increase the number of polymorphonuclear leukocytes and macrophages. The increased number of macrophages in the liver aids in clearing the liver of toxic materials including heavy metals. It is used to protect the body from the effects of radiation (e.g. during cancer therapy), to protect the body from toxic metals such as lead and mercury, and to slow aging. It is also used orally to increase beneficial flora in the gastrointestinal tract in order to improve digestion, and to help treat ulcers, colitis,

Crohn's disease, and diverticulosis. Chlorella is also promoted for treatment of constipation, bad breath, and hypertension, to reduce serum cholesterol; to increase energy; to detoxify the body; and as a source of magnesium to promote mental health.³

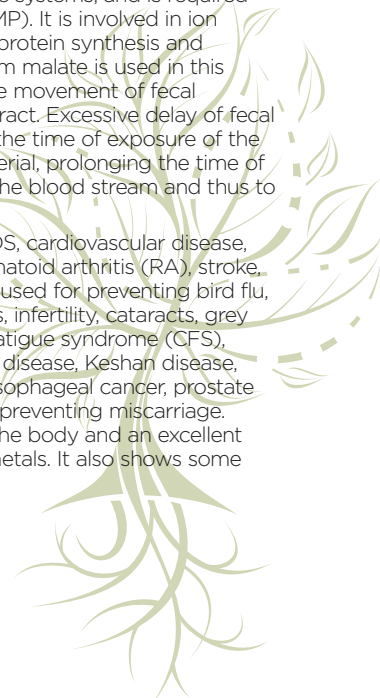
N-acetyl cysteine is used as an antidote for acetaminophen and carbon monoxide poisoning, preventing sports injury complications; radiation therapy; increasing immunity to flu; and for detoxifying heavy metals such as mercury, lead, and cadmium. It is also used orally for preventing alcoholic liver damage; for protecting against environmental pollutants including carbon monoxide, chloroform, urethanes and certain herbicides; for reducing toxicity of ifosfamide and doxorubicin; and for human immunodeficiency virus (HIV). It is the direct precursor of glutathione, one of the most important anti-oxidants in the body. The cysteine-glutathione pool is reduced by heavy metals, potentiating the oxidative damage done to organs.⁴

Alpha-lipoic acid is both water and fat soluble and can regenerate endogenous antioxidants, such as Vitamin E, Vitamin C, and glutathione, and prevent oxidative damage. It has also been found to increase intracellular glutathione and coenzyme Q10 levels. It also chelates certain toxic metals such as copper, manganese, mercury, cadmium and zinc. All of these properties play an important part in preventing oxidative damage due to metal exposure.⁵

R-Alpha-lipoic acid is the active isomer of Lipoic Acid. It is easily synthesized and metabolized by the body and is more effective than regular Alpha Lipoic Acid.⁶

Magnesium is the second most plentiful cation in the intracellular fluid and the most plentiful cation in the body. Magnesium is involved with more than 300 enzyme systems, and is required for the formation of cyclic AMP (cAMP). It is involved in ion movements across cell membranes, protein synthesis and carbohydrate metabolism. Magnesium malate is used in this formulation as a laxative. It aids in the movement of fecal material out of the gastro-intestinal tract. Excessive delay of fecal movement in the intestine prolongs the time of exposure of the intestinal epithelium to the fecal material, prolonging the time of absorption of toxic substances into the blood stream and thus to the organism as a whole.¹

Selenium is used for treating HIV/AIDS, cardiovascular disease, hypothyroidism, osteoarthritis, rheumatoid arthritis (RA), stroke, and atherosclerosis. Selenium is also used for preventing bird flu, macular degeneration, allergic rhinitis, infertility, cataracts, grey hair, abnormal pap smears, chronic fatigue syndrome (CFS), arsenic poisoning, Osgood-Schlatter disease, Keshan disease, mood disorders, colorectal cancer, esophageal cancer, prostate cancer, lung cancer, skin cancer, and preventing miscarriage. Selenium is a strong anti-oxidant in the body and an excellent chelator of arsenic and other toxic metals. It also shows some anti-tumor properties.²



Reasons for Combination

Recent studies have shown that lead/metals cause oxidative stress by inducing the generation of reactive oxygen species. This process reduces the antioxidant defense system of cells by depleting glutathione, inhibiting sulfhydryl-dependent enzymes, interfering with some essential metals needed for antioxidant enzyme activities, and/or increasing susceptibility of cells to oxidative attack by altering the membrane integrity and fatty acid composition. Consequently, it is plausible that impaired oxidant/antioxidant balance can be partially responsible for the toxic effects of lead. Where enhanced oxidative stress contributes to lead-induced toxicity, restoration of a cell's antioxidant capacity provides a partial remedy. Several studies are underway to determine the effect of antioxidant supplementation following lead exposure. Data suggest that antioxidants may play an important role in abating some hazards of lead. Any compound or situation that causes oxidative stress does so by accelerating pro-oxidant reactive cells, reducing the antioxidant defense of cells, or by inducing both. Lead has been shown to negatively affect cell membrane structure and function due to the vulnerability of peroxidation of fatty acids (a major component of cell membranes). Due to the oxidative concentration of red blood cells and the high lipid levels in the brain, metals have been found to be highly concentrated in this area of the body. The neurological effects of metal toxicity have been reported in epidemiological studies in both children and adults. These include slowing of nerve conduction activity, lowered neurobehavioural performance, and accelerated psychological aging. Oxidative stress can lead to chronic morbidity and or adverse effects of aging.

There is growing evidence that micronutrient intake has a significant effect on the toxicity caused by various chemicals. Micronutrients interact with toxic metals at several points in the body; absorption and excretion of toxic metals, transport of metals in the body, binding to target proteins, metabolism of toxic metals and oxidative stress. It should be noted that people eating a diet deficient in micronutrients could be predisposed to toxicity from non-essential metals. Endogenous and exogenous antioxidants scavenge ROS before they cause damage to the various biological molecules, or prevent oxidative damage from spreading, (e.g. by interrupting the radical chain reaction of lipid peroxidation). The antioxidant defense systems in the human body are extensive and consist of multiple layers, which protect at different sites and against different types of ROS. Furthermore, the metabolism and excretion of heavy metals that enter the body depend greatly on the presence of antioxidants to ensure efficient mobilization and excretion of these toxic metals.

Research Synopsis

1. **Selenium** - Arsenism is a disease with severe damage to human health resulting from long-term exposure to high arsenic levels in the environment. Selenium was used to prevent the accumulation of arsenic in the human body and rectify the damages in the experiment. After the administration of 100–200 mg Se/day for 14 months, 75.0 and 55.0% of the patients served as patients for selenium-therapy group in clinical examination and symptom, and 25.6% and 24.4% as control group. In the Se-therapy group, liver function, hepatic ultrasonotomography, electrocardiogram and electron microscope observation of erythrocytes reversed significantly more than the control as 80%, 60%, 72.22%, 84.78% versus 46.15%, 30.7%, 0%, 44.83%, respectively. Arsenic concentration in blood, urine and hair of the Se-group decreased much more than that of the control group.⁷

2. **Chlorella** - *Chlorella protothecoides* accelerated the detoxification of chlordecone poisoned rats, decreasing the half-life of the toxin from 40 to 19 days. The ingested algae passed through the gastrointestinal tract unharmed, interrupted the enteric recirculation of the persistent insecticide, and subsequently eliminated the bound chlordecone with the feces. The detoxification was similar to that obtained with cholestyramine. Laboratory preparations were made to determine whether cell-free components retained the therapeutic properties of the whole cells. Acid and alkaline hydrolysis of the algae destroyed the cells except for the resistant cell wall components. One component was sporopollenin, a carotenoid polymer of limited natural occurrence among microorganisms and plants. Plant sporopollenin was not active, but algal cell walls and sporopollenin retained the therapeutic activity of the whole cells. The cells and cell walls have potential as detoxifying drugs for animals poisoned by chlordecone and other xenobiotic compounds with similar properties.⁸
3. **N-acetyl-L-cysteine** - Glutathione is an important thiol-containing compound involved in the detoxification process in erythrocytes. Its thiol group reacts with a variety of xenobiotics in a glutathione S-transferase catalyzed reaction to form conjugates that are effluxed from the erythrocytes by an ATP-dependent transport mechanism. A well studied experimental system is the transport of the conjugate of glutathione and 1-chloro-2,4-dinitrobenzene. We investigated whether N-acetyl-L-cysteine protects the free thiol content and restores 1-chloro-2,4-dinitrobenzene detoxification in erythrocytes or replaces glutathione in the detoxification process in glutathione predepleted erythrocytes. The research showed that N-acetyl-L-cysteine restores the intracellular free thiol content following depletion by 1-chloro-2,4-dinitrobenzene and N-ethylmaleimide. Our results also suggest that N-acetyl-L-cysteine recovers the dinitrophenyl-glutathione transport and replaces glutathione in the detoxification of 1-chloro-2,4-dinitrobenzene in glutathione predepleted erythrocytes.⁹

References

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