

Helps support the body's detoxification systems, reduce oxidative stress, and maintain good health

Rx Balance™ DTX-Factors+ provides specific antioxidants, herbs, conjugating agents, and nutritional cofactors essential to Phase I and Phase II detoxification reactions. Supplementation with these nutrients has been shown to prevent and reverse chemical toxicity and its associated disease manifestations.

Ingredients: Medicinal	
Each capsule contains:	
Vitamin A (retinyl palmitate)	125 mcg RAE (416 IU)
Beta-carotene	187.5 mcg RAE / 375 mcg (1250 IU)
Vitamin C (sodium ascorbate)	83.3 mg
Vitamin E (d-alpha-tocopheryl succinate)	27.9 mg AT (41.6 IU)
Thiamine (thiamine hydrochloride)	2.5 mg
Riboflavin (riboflavin-5-phosphate)	4.1 mg
Niacin (inositol hexanicotinate)	15 mg
Vitamin B6 (pyridoxine-5-phosphate)	5 mg
Folate (folic acid)	100 mcg
Vitamin B12 (cyanocobalamin)	16.6 mcg
Biotin	33.3 mg
Pantothenic acid (calcium-d-pantothenate)	16.6 mg
Magnesium (magnesium citrate)	32.1 mg
Zinc (zinc HVP* chelate)	5 mg
Selenium (selenomethionine)	33.3 mcg
Copper (copper gluconate)	330 mcg
Manganese (manganese citrate)	1.6 mg
Molybdenum (sodium molybdate)	16 mcg
Choline (choline bitartrate)	33.3 mg
Inositol	16.6 mg
L-Methionine	60 mg
Coenzyme Q10 (ubidecarenone)	4.1 mg
L-Glutamic acid	50 mg
Glycine (aminoacetic acid)	33.3 mg
L-Histidine (L-histidine hydrochloride)	8.3 mg
L-Serine	8.3 mg
Taurine	33.3 mg
N-acetyl-L-Cysteine	0.5 mg
L-Glutathione (reduced)	50 mg
DIM (diindolylmethane)	0.5 mg
Quercetin	33.3 mg
Broccoli florets (<i>Brassica oleracea L.</i>) 20:1 extract (equivalent to 332 mg)	16.6 mg
Catalase (<i>Aspergillus niger</i>)	8.3 mcg / 300 Baker Units
Grape seed (<i>Vitis vinifera</i>) extract (std. to 95% polyphenols)	1.6 mg
Milk thistle (<i>Silybum marianum L.</i>) seed extract (std. to 80% silymarin)	8.3 mg
Kudzu root extract (<i>Pueraria montana</i>)	0.5 mg
Calcium d-glucarate	41.6 mg
*Hydrolyzed Vegetable Protein	

Ingredients: Non-medicinal

Hypromellose, silicon dioxide.

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

Recommended Use

Helps to support the body's detoxification system and reduce oxidative stress. Helps to maintain good health.

Recommended Dose

Adults take 2 capsules twice daily with meals, or as directed by a health care practitioner. Take a few hours before or a few hours after taking medications.

Risk Information

Do not use if pregnant or breastfeeding. Individuals with impaired liver function should consult a health care practitioner before use. Keep out of reach of children.

Interactions with Drugs/Supplements

Consult a health care practitioner if you are seriously ill or if you are taking nutritional supplements or medications.

Dosage Form Description

Vegetable capsule

Packaging

Available in bottles of 90 vegetable capsules.

Stability

Shelf life of 3 years when stored in a cool, dry place.

Ingredient Description

Rx Balance™ DTX-Factors + consists of antioxidants, herbs, conjugating agents, and important vitamin and mineral cofactors that support the detoxification pathways in the body. Antioxidants include glutathione (GSH), a powerful antioxidant that can neutralize free radicals directly or act as a cofactor along with the selenium-containing enzyme glutathione peroxidase to neutralize hydrogen peroxide. Coenzyme Q10 has direct antioxidant activity, especially in cell membranes. CoQ10 is the key component in oxidative phosphorylation in mitochondria, where energy in the form of adenosine triphosphate (ATP) is generated. Vitamin C is a direct antioxidant and a cofactor in the mixed-function oxygenase (MFO) system operating in the microsomes and reticuloendothelial tissues in the liver. Vitamin C is required to stabilize the integrity of the cytochrome P-450 electron transport system. Vitamin E is a powerful free radical neutralizer that prevents lipid peroxidation in cell membranes. Vitamin E, along with selenium, is a cofactor in glutathione peroxidase activity. Selenium is an essential component of the antioxidant enzyme glutathione peroxidase that catalyzes the reduction of GSH. A deficiency of selenium is associated with an increased risk of numerous cancers. The herbal support in this formula includes diindolylmethane (DIM), a dietary indole found in cruciferous vegetables. This phytochemical is able to modify the metabolism of estrogen. Unlike soy isoflavones, genistein, and daidzen, DIM is not an estrogen mimic or phytoestrogen and has no inherent estrogenic activity. DIM acts to balance the natural response

to estrogen by adjusting the activity of metabolic cytochrome enzymes and specialized estrogen receptor molecules. Kudzu root, a herb high in the isoflavone puerarin, has been used for centuries in Traditional Chinese Medicine for alcoholism, allergies, migraines, and diarrhea. Quercetin is a bioflavonoid with direct antioxidant and detoxification activity. It can inhibit lipid peroxidation, chelate iron and copper, and protect cells and tissues against the effects of reactive oxygen species. Milk thistle has, as its main component, silymarin. This phytochemical is one of the most potent hepatoprotective agents known. Milk thistle has been found to protect liver cells from iron toxicity and radiation damage.

The conjugating agents in this formula, glutathione, folic acid, vitamin B12, glycine, glutamine, and taurine function in Phase II of liver detoxification by conjugating, or "hooking onto," the toxins created during Phase I. The important vitamin and mineral cofactors in this formula include calcium-d-glucarate, vitamin A, copper, manganese, molybdenum, and zinc. These cofactors support Phase I and Phase II detoxification pathways.

Reason for Combination

Rx Balance™ DTX-Factors + provides specific antioxidants, conjugating agents, and vitamin and mineral cofactors essential to Phase I and Phase II detoxification reactions in the liver. During Phase I of detoxification, oxidants are produced; the antioxidants in this formula protect the liver from overexposure to oxidative stress during the detoxification process. The herbs in this formula protect the liver from oxidative damage and, especially diindolylmethane (DIM), an indole found in cruciferous vegetables, balance the natural response to estrogen. The conjugating agents in this formula prepare fat-soluble toxins for elimination, especially glutathione, which conjugates toxins, making them water soluble and drawing them out of the body. The vitamin and mineral cofactors in this formula support Phase I and Phase II detoxification pathways.

Research Synopsis

- Xenobiotics are environmental chemicals that are foreign to the human body. Lipophilic (fat soluble) xenobiotics are the most damaging. They can easily pass through the skin or lungs or across the mucosal lining of the gastrointestinal tract, yet they are not easily excreted. The resultant accumulation of toxins in the body can cause adverse health effects, ranging from acute toxicity and tissue damage to chronic immune dysfunction, neurologic disturbances, and cancer. The body must transform lipid-soluble toxins into water-soluble metabolites that are readily excreted in the urine, bile, perspiration, and expired air. This process, known as biotransformation, occurs primarily in the liver. With nutritional detoxification, there is an enhancement of the two hepatic biotransformative processes by providing the nutrients essential to Phase I and Phase II conjugation reactions. In Phase I, specific enzymatic reactions take place, for example, oxidation, reduction, and hydrolysis, whereas with Phase II, conjugation reactions occur, for example, glucuronidation, glutathione conjugation, amino acid conjugation, acetylation, methylation, and sulfation. Together, these two phases are known as detoxification.^{7,10}
- The antioxidants in this formula, such as glutathione, coenzyme Q10, vitamin C, vitamin E, and selenium, support liver detoxification by neutralizing free radicals and thus protecting the body from carcinogenic toxins.^{3-5,9}
- Herbal support in this formula includes diindolylmethane (DIM), kudzu root, quercetin, and milk thistle. Supplemental use of DIM in humans has been shown to be effective in adjusting the pathways of estrogen metabolism to favour the production of 2-hydroxy estrogen metabolites. Studies show that dietary supplementation with DIM from cruciferous vegetables help protect against estrogen imbalance and reduce the risk of breast and uterine cancer associated with HRT in women. DIM has also been shown to minimize the impact of increased estrogen on atherosclerosis and prostate disorders characteristic of andropause in men.¹² Phytoestrogen studies using extracts of kudzu root showed that it had significant competitive binding to estrogen receptor beta (ERbeta). Kudzu enhances 2-hydroxyestrogen metabolism versus the 4-hydroxy 16 alpha pathway.^{12,11,13} Quercetin is a bioflavonoid that can inhibit lipid peroxidation, protecting against free radical damage.^{3,7,10} Milk thistle is one of the best known herbs for protecting the liver. A study with rats showed that milk thistle (silymarin) stimulated the process of liver

regeneration after continual gamma irradiation (dose rates 0.2 and 0.6 Gy/day) or after acute gamma irradiation (dose 6 Gy).⁶

- The conjugating agents in DTX-Factors + include glutathione, which, in addition to having antioxidant activity, is the cofactor for reactions catalyzed by glutathione S-transferase enzymes that protect cells from electrophilic xenobiotic compounds. Glutathione also acts as a cofactor in the conjugation of reactive metabolites formed during cytochrome P-450 biotransformation.⁹ Folic acid and vitamin B12 are important nutritional cofactors for methylation reactions. The addition of methyl groups reduces the toxicity of exogenous and endogenous compounds. Folic acid is required for homocysteine elimination.³ Glycine, glutamine, and taurine are the primary amino acids used in the amino acid conjugation system. This reaction allows urinary excretion of Phase I compounds by increasing their ability to interact with the organic anion transport system in the kidney tubules.^{3,7,10}
- The important vitamin and mineral cofactors include calcium-d-glucarate, which has been shown to inhibit beta-glucuronidase, an enzyme produced by colonic microflora and involved in Phase II liver detoxification of certain xenobiotics, lipid-soluble toxins, and steroid hormones.⁸ Vitamin A is an important nutrient for efficient cytochrome P-450 enzyme activity. Copper, manganese, and molybdenum are trace minerals that are essential to various reactions, for example, superoxide dismutase (copper), phosphorylation (manganese), and aldehyde oxidase (molybdenum). Zinc is necessary in the function of the enzyme alcohol dehydrogenase, which converts alcohols to aldehydes in Phase I detoxification.^{3,5,7,10}

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PRODUCT CODE: 403 209 - 90 Vegetable Capsules

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