## **Detoxification Pack**

Supports Liver and Gastrointestinal Function<sup>†</sup>

## **DESCRIPTION**

Douglas Laboratories<sup>®</sup> Detoxification Pack contains ingredients carefully selected to support the body's normal detoxification process.<sup>†</sup> This pack contains amino acids, vitamins, minerals and herbs as part of a 15 day detoxification regimen and can be used in conjunction with Metabolic Cleanse powder.

### **FUNCTIONS**

The Detoxification Pack contains vitamin, mineral, herbal and lipotropic constituents that support the function of the digestive tract and liver. †

Fiber from pectin's and glucomannan can naturally stimulate the bowel and may contribute to immobilizing toxic compounds in the gastrointestinal tract. Magnesium citrate and slippery elm bark are commonly used to support regular bowel movements. †

As the body's main detoxification organ, the liver is responsible for removing all potentially detrimental molecules such as alcohol, drugs and air pollutants from the blood stream. A variety of cruciferous vegetables including broccoli and wasabi may have potent liver protective activities which include induction of a detoxifying enzyme, glutathione S-transferase (GST). The conversion of oxidized glutathione disulfide (GSSG) to its reduced state (GSH) is the body's primary pathway for dealing with oxidative stress. This activity can be both liver protective and antiproliferative, likely via influencing levels of reactive oxygen species. Broccoli sprout-derived sulforaphane is a phytochemical which has been shown through double-blind, placebo controlled human studies to be capable of activating GST.† Sulforaphane is considered to be an inducer of phase II enzyme activity in the liver and has also demonstrated a role in maintaining healthy colon cell function.† Another plant in the Brassicacea family containing phytochemicals with potential for cytoprotection is wasabi. The wasabi rhizome contains various isothiocyanates and in particular a key active compound called 6-methylsulfinylhexyl isothiocyanate (6-HITC) which has been shown to support various biological properties including the induction of nuclear factor erythroid 2-related factor 2 (Nrf2).† Nutrigenomic activation of transcription factor Nrf2, is required to turn on many genes that induce cytoprotection such as those playing key roles redox status and detoxification

Silybum marianum, milk thistle, is rich in flavonoids known collectively as silymarin. Silymarin has been shown to support and enhance normal, healthy liver function through three primary actions. By binding to the outer cell membrane, silymarin inhibits unwanted toxins from entering the cell.† Silymarin further protects the liver as an important component of the liver's antioxidant defense. The liver generates potentially damaging, toxic free radicals and reactive oxygen species (e.g. peroxides) as a result of its normal metabolic and detoxifying functions. Silymarin supports healthy levels of glutathione and superoxide dismutase, two primary substances with antioxidant activity in the liver that reduce free radicals known to interfere with normal cell function.† *Cynara scolymus*, artichoke, has been used medicinally for centuries. Similar to milk thistle, it is beneficial to the liver as it supports the liver's excretion of fats.† Extracts of artichoke can stimulate the flow of bile from the liver and support liver cells from oxidative damage.† Cynara's usefulness in liver health is thought to be due to its content of caffeoylquinic acids, e.g. cynarin, and flavonoids.

Studies have shown that curcumin contains antioxidant properties and can assist in the regulation of physiological responses.<sup>†</sup> Researchers believe curcumin's mechanism of action is likely mediated through its ability to inhibit cyclooxygenase-2 (COX-2), lipoxygenase (LOX), and induce nitric oxide synthase.

Choline, betaine, and methionine are involved in methyl group metabolism, which is essential for normal liver function. Choline, methionine and inositol are also lipotropic nutrients. A lipotropic nutrient promotes or encourages the export of fat from the liver. Lipotropics are necessary for maintenance of a healthy liver, and for burning the exported fat for additional energy. Without lipotropics, such as choline and inositol, fats and bile can become trapped in the liver, resulting in unfavorable conditions of the liver.

# **Detoxification Pack**

Supports Liver and Gastrointestinal Function<sup>†</sup>

## **INDICATIONS**

Detoxification Pack may be a useful dietary supplement for individuals who wish to support the body's normal detoxification processes.+

## FORMULA (#66866-30X)

Serving size 1 pack (5 tablets, 1 capsule per pack)  Vitamin B1 (thiamine HCl)	5 mg .3 mg 50 mg 0 mcg 0 mcg 00 mg
apple pectin, sodium alginate, slippery elm bark.	
N-Acetyl-L-Cysteine	50 mg 85 mg 25 mg 20 mg 1.6 mg 25 mg 00 mg 00 mg
(Standardized to 500 mcg of sulforaphane)	2.5 mg
Wasabia japonica (rhizome) (providing 100 mcg of isothiocyanates) Milk Thistle Extract (Silybum marianum, fruit)	
(Standardized to 80% silymarin) 87 Milk Thistle (seed) Silybum marianum 16 Tumeric (Curcuma longa, rhizome) 16 Inositol 16 Lecithin Granulars (from soy) 17 L-Glutathione 17 L-Methionine 11	6.6 mg 6.6 mg 50 mg 25 mg 25 mg 19 mg

Other ingredients: Gelatin (capsule), hydroxypropyl methylcellulose (capsule), ascorbyl palmitate, cellulose, magnesium silicate, silica, vegetable stearate.

## SUGGESTED USE

For a 15 day detoxification program, take 1 pack in the morning and 1 pack in the evening before meals or as directed by a healthcare professional.

## **Detoxification Pack**

Supports Liver and Gastrointestinal Function<sup>†</sup>

### SIDE EFFECTS

No adverse side effects have been reported, consult with a medical practitioner if taking prescription medication.

### **STORAGE**

Store in a cool, dry place, away from direct light. Keep out of reach of children.

#### REFERENCES

Galan MV, Kishan AA, Silverman AL. Dig Dis Sci. 2004 Aug;49(7-8):1088-90.

Gao X, Talalay P. Proc Natl Acad Sci U S A. 2004 Jul 13;101(28):10446-5.

Gill HS, Rutherfurd KJ, Prasad J, et al. Br J Nutr 2000;83:167-76.

Kailasapathy K, Chin J. Immunol Cell Biol 2000;78:80-8.

Singh SV, Herman-Antosiewicz A, Singh AV, Lew KL, Srivastava SK, Kamath R, Brown KD, Zhang L, Baskaran R. J Biol Chem. 2004 Jun 11;279(24):25813-22.

Manesh C, Kuttan G. Fitoterapia. 2003 Jun;74(4):355-63.

Morimitsu Y, Hayashi K, Nakagawa Y, Horio F, Uchida K, Osawa T. Biofactors,. 2000;13(1-4):271-6. Jorgačević B, Mladenović D, Radosavljević T, et al. Human & Experimental Toxicology [serial online]. July 2014;33(7):701-709. [Choline].

Salem M, Affes H, Zeghal K, et al. Plant Foods For Human Nutrition (Dordrecht, Netherlands) [serial online]. December 2015;70(4):441-453. [Artichoke].

Mehmetçik G, et al. Experimental and Toxicologic Pathology: Official Journal Of The Gesellschaft Für Toxikologische Pathologie [serial online]. September 2008:60(6):475-480. [Artichoke].

Hfaiedh M, Brahmi D, Zourgui L. Environmental Toxicology [serial online]. October 1, 2014. [Dandelion]. Gopalakrishnan R, et al. Molecular And Cellular Biochemistry [serial online]. May 2013;377(1-2):163-176. [Milk thistle]

Chtourou Y, Garoui E, Boudawara T, Zeghal N. Human & Experimental Toxicology [serial online]. January 2013;32(1):70-81. [Milk thistle].

Luangchosiri C, et al. BMC Complementary And Alternative Medicine [serial online]. September 23, 2015;15(1):334. [Milk thistle].

He Q, Kim J, Sharma R. Toxicological Sciences: An Official Journal Of The Society Of Toxicology [serial online]. August 2004;80(2):335-342. [Milk thistle].

Christian JS, Rege RV. J Surg Res 1996;61:275-81. [Methionine].

Chuang SE, Kuo ML, Hsu CH, et al. Carcinogenesis 2000;21:331-5. [Curcumin].

### For more information on the Detoxification Pack visit douglaslabs.com

<sup>†</sup>These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

Manufactured by Douglas Laboratories 112 Technology Drive Pittsburgh, PA 15275 800-245-4440 douglaslabs.com

