

# Liver Defense



## Clinical Applications

- Supports Healthy Liver Function\*
- Supports Cytokine Balance\*
- Supports Glutathione Production\*
- May Protect Liver Tissue\*

*Liver Defense contains the amino acid N-acetyl-L-cysteine, a key component of glutathione—a tripeptide that plays a significant role in detoxification and antioxidant support. Liver Defense also contains a combination of alpha-lipoic acid, silymarin from milk thistle, and selenium for support of antioxidant activity, regeneration of other antioxidants, and promotion of healthy immune function.\**

All Ingels Family Health Formulas Meet or Exceed cGMP Quality Standards

## Discussion

The liver is the body's major metabolic organ. It processes, packages, stores, and ships out carbohydrates, fats, proteins, and micronutrients. It is responsible for the breakdown and elimination of alcohol, toxins, hormones, and medications, as well as for the synthesis of vital proteins, such as albumin, prealbumin, and clotting factors. It may be stated that the health of the body depends on the health of the liver. Research suggests that providing targeted nutrition supplementation may help support liver function and health.\*<sup>[1]</sup>

**N-Acetyl-Cysteine (NAC)** An acetylated derivative of the sulfur-containing amino acid L-cysteine, NAC promotes the synthesis of glutathione—a tripeptide that is active in detoxification and antioxidant systems. Glutathione also supports a healthy defense against hepatotoxic environmental pollutants, gamma-radiation, and other potential toxins.\*<sup>[1,2]</sup>

**Alpha-Lipoic Acid** Sometimes referred to as thioctic acid, alpha-lipoic acid is both water- and fat-soluble. It supports glutathione, helps regenerate antioxidant vitamins C and E, helps maintain the ratio of reduced to oxidized CoQ10 in the mitochondria, and helps support healthy levels of nitric oxide in the liver and kidney.<sup>[3]</sup> The redox couple of lipoic acid and dihydrolipoic stabilizes NF-kappaB transcription and may help support healthy immune functions in the body.\*<sup>[4,5]</sup>

**Milk Thistle Seed Extract** Silymarin, the active component in milk thistle, has a history of use in promoting liver health. It supports antioxidant activity, neutralizes toxins, and also may protect hepatocytes' genetic material. Like alpha-lipoic acid, silymarin supports production of cellular glutathione. Its actions in the liver include maintaining normal levels of fat peroxidation and fibrous tissue formation; supporting a healthy immune response and the natural response to inflammation; and promoting protein synthesis and normal regeneration of liver tissue.<sup>[6]</sup> A randomized placebo-controlled study of 103 individuals suggested that silymarin yielded statistically positive results and was well tolerated.\*<sup>[7]</sup>

**Selenium (as selenomethionine)** An important coenzyme for the glutathione peroxidase detoxification system, selenium also appears to support the endogenous antioxidant defenses of hepatocytes by upregulating their manganese superoxide dismutase (MnSOD) expression. At the same time, selenium appears to support healthy cytokine balance by affecting interleukin-6 (IL-6) transcription in Kupffer cells (liver-based macrophages).<sup>[8]</sup> Kupffer cells play a crucial role in maintaining normal structure and function in the liver. Supporting their function and the body's normal inflammatory response in turn supports liver health overall.\*<sup>[9]</sup>

Upon studying targeted nutrition support for liver health, physician and researcher Dr. Burton M. Berkson chose to combine alpha-lipoic acid, silymarin, and selenium to obtain a balanced and low-cost approach to liver support.<sup>[10]</sup> These three ingredients plus NAC are all present in Liver Defense to support liver health, antioxidant activity, and the body's natural immune defenses.\*

**\*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.**

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Liver Defense



## Supplement Facts

Serving Size: 1 Capsule  
Servings Per Container: 60

	Amount Per Serving	%Daily Value
Selenium (as L-selenomethionine)	100 mcg	182%
Milk Thistle Extract ( <i>Silybum marianum</i> ) (seed)(80% silymarin)	262.5 mg	**
Alpha-Lipoic Acid	200 mg	**
N-Acetyl-L-Cysteine	200 mg	**

\*\* Daily Value not established.

**Other Ingredients:** HPMC (capsule), stearic acid, microcrystalline cellulose, magnesium stearate, and silica.

## Directions

Take one capsule twice daily, or as directed by your healthcare practitioner.

Consult your healthcare practitioner prior to use. Individuals taking medication should discuss potential interactions with their healthcare practitioner. Do not use if tamper seal is damaged.

## References

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4. Suzuki YJ, Aggarwal BB, Packer L. Alpha-lipoic acid is a potent inhibitor of NF-kappa B activation in human T cells. *Biochem Biophys Res Commun*. 1992 Dec 30;189(3):1709-15. [PMID: 1482376]
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## Does Not Contain

Wheat, gluten, yeast, soy, animal or dairy products, fish, shellfish, peanuts, tree nuts, egg, ingredients derived from genetically modified organisms (GMOs), artificial colors, artificial sweeteners, or artificial preservatives.

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