

# LIPOSOMAL SULFORAPHANE

## Liposomal Sulforaphane Supports:

- Detoxification
- Antioxidant Activity via Nrf-2 Activation
- Brain Function

Sulforaphane, an isothiocyanate (a group of chemicals that substitute a sulfur molecule for an oxygen molecule and are formed via an enzyme driven conversion by another compound, Glucosinolates), is a sulfur-rich compound found in many cruciferous vegetables like broccoli, cabbage, cauliflower, and kale.

Studies have demonstrated its ability to support immune function<sup>1</sup> and heart health<sup>2</sup>. It has also been studied to support neurological health in children<sup>3</sup> and metabolic function in adults<sup>4</sup>.

Many isothiocyanates, particularly sulforaphane, have been shown to promote the expression of antioxidant enzymes via the activation of the nuclear factor erythroid 2-related factor 2 (Nrf2) dependent pathway.

Sulforaphane has demonstrated the ability to reduce the nuclear translocation of the pro-inflammatory transcription factor nuclear factor (NF)- $\kappa$ B, which largely controls the production of other inflammatory cytokines such as TNF, IL-1 and IL-6.

Isothiocyanates have been found to modulate the activity of phase I biotransformation enzymes, primarily the cytochrome P450 (CYP) family.

Isothiocyanate compounds are also potent inducers of phase II detoxifying enzymes, including Glutathione S-transferase and glutamate cysteine ligase (GCL), which have the potential to protect cells from DNA damage by carcinogens and reactive oxygen species (ROS).\*

Broccophane<sup>®</sup>, the branded, standardized version of sulforaphane is what is used in this liposomal delivery system. The liposomal liquid delivery system allows for flexible, convenient sulforaphane, with the ability to manipulate daily amounts easily in order to address individual requirements. Liposomal technology helps to maintain the health benefits of this compound by protecting it from the degradative environment of the stomach. This is especially beneficial for patients who have had gastric bypass or have general gastro-intestinal dysfunction.\* Liposomal encapsulation of ingredients represents a novel delivery

system that appears to offer important advantages over existing methods of delivery, including protection and speed of absorption.

**Suggested Use:** As a dietary supplement, take 1 ml in the AM and PM, or as directed by your healthcare practitioner. Shake well before each use.

## Supplement Facts

Serving Size 1 ml

Servings Per Container 60

Amount Per Serving	% Daily Value
Total Carbohydrates <1 g	0%†
BroccoPhane <sup>®</sup> Broccoli ( <i>Brassica oleracea</i> ) Sprout Powder 93.75 mg	*
Yielding sulforaphane 375 mcg	

Total Carbohydrates <1 g 0%†

BroccoPhane<sup>®</sup> Broccoli (*Brassica oleracea*) Sprout Powder 93.75 mg \*  
Yielding sulforaphane 375 mcg

†Percent Daily Values are based on a 2,000 Calorie diet.

\*Daily Value not established.

Other Ingredients: glycerin, water, oleic acid polyglyceride, natural flavors, sunflower lecithin, sunflower oil, bilberry extract, xanthan gum, potassium citrate, mixed tocopherols, rosmarinic acid.

**Warning:** If pregnant or nursing, consult your healthcare practitioner before taking this product.

VEGETARIAN / GLUTEN FREE / SOY FREE / DAIRY FREE

<sup>1</sup>Ullah M. F. (2015). Sulforaphane (SFN): An Isothiocyanate in a Cancer Chemoprevention Paradigm. *Medicines (Basel, Switzerland)*, 2(3), 141–156. doi:10.3390/medicines2030141

<sup>2</sup>Bai, Y., Wang, X., Zhao, S., Ma, C., Cui, J., & Zheng, Y. (2015). Sulforaphane Protects against Cardiovascular Disease via Nrf2 Activation. *Oxidative medicine and cellular longevity*, 2015, 407580. doi:10.1155/2015/407580

<sup>3</sup>Singh, K., Connors, S. L., Macklin, E. A., Smith, K. D., Fahey, J. W., Talalay, P., & Zimmerman, A. W. (2014). Sulforaphane treatment of autism spectrum disorder (ASD). *Proceedings of the National Academy of Sciences of the United States of America*, 111(43), 15550–15555. doi:10.1073/pnas.1416940111

<sup>4</sup>A. S. Axelsson, E. Tubbs, B. Meckam, S. Chacko, H. A. Nenonen, Y. Tang, J. W. Fahey, J. M. J. Derry, C. B. Wollheim, N. Wierup, M. W. Haymond, S. H. Friend, H. Mulder, A. H. Rosengren, Sulforaphane reduces hepatic glucose production and improves glucose control in patients with type 2 diabetes. *Sci. Transl. Med.* 9, eaah4477 (2017).

\*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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