

# Sinus Support

## CLINICAL APPLICATIONS

- Provides Support for Sinus and Respiratory Challenges
- Aids in Breakdown and Clearance of Mucus
- Helps Soothe Sinus Tissue
- Boosts Immune Response



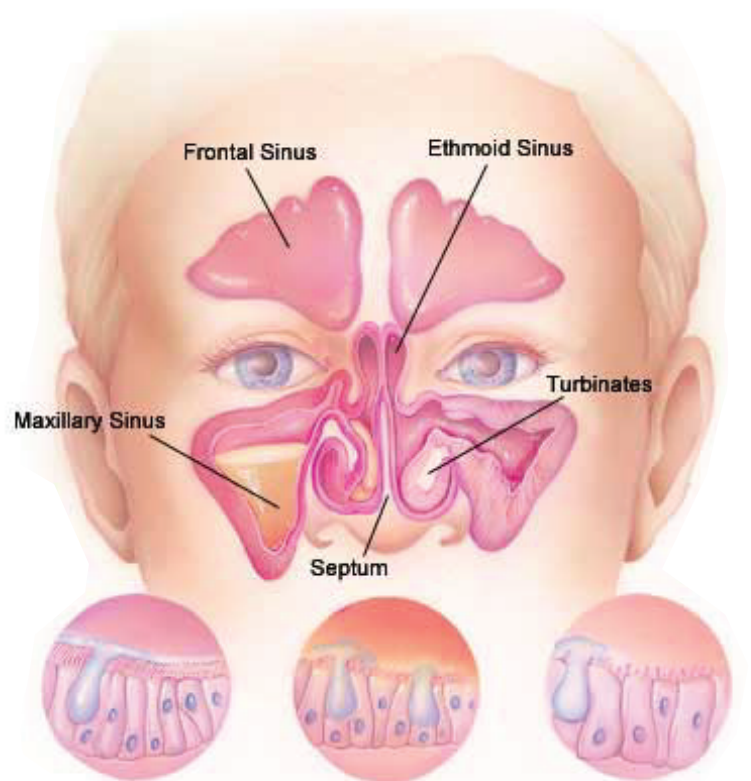
This product is a unique nutrient and botanical formulation providing effective support for upper respiratory challenges. Standardized botanical extracts and nutrients support sinus health by reducing the viscosity of mucus, clearing airway passages, and promoting nasal microbial and inflammatory balance. *Also available in convenient blister packs.*

## Overview

Optimal sinus health requires adequate mucus flow and clearance throughout the nasal cavities. The sinuses are hollow cavities branching from the nasal passages. While the nasal passages are often colonized with bacteria, the sinuses are typically sterile under healthy conditions. The sinuses and nasal passages are lined with soft tissue, called mucosa, that feature thin, hair-like projections called cilia. Specialized cells of the mucosal tissue, known as goblet cells, secrete a thin layer of mucus to absorb microbes and allergens, such as dust, dirt, pollen, and mold, inhaled through the nose. Working together, cilia “beat” to move mucus and waste out of the sinuses and nasal passages. Upper respiratory challenges may impair this process, known as mucociliary clearance, and contribute to fluid entrapment within the sinus cavities. This product contains a synergistic blend of nutrients and botanical ingredients to quickly boost immune response, decrease mucus build-up and increase mucociliary clearance during upper respiratory challenges.

## N-Acetyl Cysteine†

N-acetyl cysteine (NAC) is a powerful amino acid that decreases the thickness of mucus. NAC helps to dissolve mucus by breaking disulfide bonds that create mucus density, allowing for easier drainage of mucus. In a double-blind study of 12 healthy volunteers with slow mucociliary clearance, NAC supplementation for 60 days resulted in a 35% increase in mucociliary clearance rate compared to no improvement in the placebo group.<sup>1</sup> NAC is also a precursor to the body's



Normal cilia beat back and forth, propelling mucus and trapped particles out of the sinus.

Mucus build-up during respiratory challenges creates moist conditions, which in turn supports fungal growth; decreased clearance results in trapped particles.

Sinus tissues become irritated, mucosal lining becomes thick and fibrous, triggering an ongoing irritation.

most powerful antioxidant, glutathione, which is an essential component of a healthy immune response.

## Turmeric (Complete Turmeric Matrix)†

Whole-root turmeric and its active components have been used in traditional Ayurvedic medicine for centuries. In herbal medicine of old, practitioners used teas, tinctures and extracts of all types. In the 21st century, as research grew on the benefits

†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.



of turmeric, the focus shifted to identifying and isolating one individual compound, curcumin, rather than delivering the comprehensive benefits of a matrix of turmeric bioactives. As a result, concentrating curcumin led to poor absorption and pharmaceutical methods were applied to bypass the gut and increase its bioavailability. The glaring disadvantage of applying this pharmaceutical model to botanicals is that it misses the benefits of other bioactives present within the turmeric matrix and their positive effects on the microbiome. New research on turmeric shows the additional bioactives in turmeric have additional benefits and enhance bioavailability. The Complete Turmeric Matrix includes compounds from the entire turmeric root, all working together as nature intended to deliver better results. The Complete Turmeric Matrix formulation contains standardized amounts of 45%–55% curcuminoids, 2%–6% turmerin protein and 3%–8% volatile oil, plus other components that make up the whole turmeric root. This matrix of bioactive compounds supports a healthy GI tract, enhances detoxification and creates a healthy microbiome. Specifically, turmeric and its phytonutrients have shown to support a healthy inflammatory response through down-regulation of the activity of cyclooxygenase-2 (COX-2) and lipoxygenase enzymes, as well as interleukin (IL)-1, 2, 6, 8 and 12.<sup>2,3</sup> The Complete Turmeric Matrix has shown to deliver the benefits of the whole turmeric root that enables it to have a potent effect on the immune system and maintain normal inflammatory balance.

### **Bromelain†**

Bromelain is a plant enzyme naturally found in the stem and fruit of the pineapple plant. Bromelain exerts a synergistic effect when combined with NAC due to its proteolytic (protein digesting) actions.<sup>4</sup> Bromelain has been found effective for thinning nasal secretions with the additional benefit of balancing inflammatory responses. A clinical study conducted in Germany in 2005 found bromelain exhibited statistically significant results for supporting sinus health and soothing sinus tissues.<sup>5</sup>

### **Berberine Sulfate†**

Berberine sulfate is a botanical extract found in the root and bark of various plants including Oregon grape root and barberry. Berberine extract has been shown to support immune responses by increasing blood flow to the spleen and activating immune cells, such as macrophages.<sup>6</sup> Berberine maintains healthy sinus function by quieting localized inflammatory response through inhibition of activator protein 1 (AP-1)<sup>7</sup> and thromboxane A2 from platelets.<sup>8</sup>

### **Chinese Licorice Root Extract†**

Chinese licorice (*Glycyrrhiza uralensis*) and common licorice

root (*Glycyrrhiza glabra*) have been used in Eastern and Western cultures for thousands of years. The active components in licorice, glycyrrhizin and glycyrrhetic acid, strengthen the immune response by inducing interferon activity, activating macrophages and augmenting natural killer cell activity.<sup>9</sup> Glycyrrhizin exerts an inflammatory balancing response by inhibiting production of free radicals by neutrophils.<sup>10</sup> Additionally, licorice has been approved by the German Commission E, a national scientific advisory board, for supporting respiratory challenges.<sup>11</sup>

### **Andrographis Leaf Extract†**

*Andrographis paniculata* has been used in Eastern medicine for centuries. The immune boosting properties of andrographis have been researched extensively in clinical studies. In seven double-blind controlled trials, andrographis was found to be a safe and effective botanical for supporting upper respiratory tract health.<sup>12</sup> In a study of 158 patients, a standardized preparation of *A. paniculata* dried extract administered for five days significantly decreased throat irritations and aided in drying nasal secretions.<sup>13</sup> The active ingredient, andrographolide, has been found to modulate inflammatory response by inhibiting NK-kappa B.<sup>14</sup>

### **Eleuthero Root Extract†**

Eleuthero root extract has been shown to support the immune response, especially in combination with andrographis. Two randomized, double-blind, placebo-controlled trials of the combination of Eleuthero and andrographis demonstrated the efficacy of this combination for respiratory challenges. In the initial pilot study, 46 subjects were given the combination three times daily for three to eight days. The second trial included 179 patients treated for three days. In both trials, significant improvement in nasal and throat health, and general immune response were reported.<sup>15</sup>

### **Thyme Herb Extract†**

Thyme has been traditionally used to soothe sinuses and loosen phlegm. Thymol, the active ingredient in thyme, has immune supporting properties and competes with immune system triggers commonly found in the sinuses and respiratory tract. The German Commission E has approved thyme to support respiratory challenges.<sup>16</sup>

### **Directions**

3 capsules per day or as recommended by your health care professional.

### **Does Not Contain**

Gluten, yeast, artificial colors or flavors.



## Cautions

Do not consume this product if you are pregnant or nursing. Consult your physician for further information.

Supplement Facts <sup>VS</sup>		
Serving Size 3 Capsules Servings Per Container 20		
	Amount Per Serving	% Daily Value
N-Acetyl-L-Cysteine USP	750 mg	*
Andrographis ( <i>Andrographis paniculata</i> ) 300 mg Leaf Extract (Standardized to contain 30% Andrographolides)		*
Thyme Extract (Whole Leaves and Flowers)	300 mg	*
Turmeric Root Extract (Complete Turmeric Matrix) (Standardized to contain 45-55% Curcuminoids, 3-8% Volatile Oil, 2-6% Turmerin)	300 mg	*
Eleuthero Root Extract (Standardized to contain 0.8% Eleutherosides)	250 mg	*
Bromelain (from Pineapple)	200 mg (480 GDU)	*
Berberine Hydrochloride Hydrate	100 mg	*
Chinese Licorice Root Extract (Standardized to contain 12% Glycyrrhizin)	100 mg	*

\* Daily Value not established.  
Other Ingredients: Hypromellose (Natural Vegetable Capsules), Magnesium Stearate and Silicon Dioxide.

## References

1. Todisco T, Polidori R, Rossi F, Iannacci L, Bruni B, Fedeli L, Palumbo R. Effect of N-acetylcysteine in subjects with slow pulmonary mucociliary clearance. *Eur J Respir Dis Suppl* 1985;139:136-41.
2. Abe Y, Hashimoto S, Horie T. Curcumin human peripheral blood monocytes and alveolar macrophages. *Pharmacol Res* 1999;39:41-47.
3. Goel A, Kunnumakkara AB, Aggarwal BB. Curcumin as "curecumin": from kitchen to clinic. *Biochem Pharmacol* 2008;75:787-809.
4. Agostinis C, Zorzet S, De Leo R, Zauli G, De Seta F, Bulla R. The combination of N-acetyl cysteine, alpha-lipoic acid, and bromelain shows high anti-inflammatory properties in novel in vivo and in vitro models of endometriosis. *Mediators Inflamm*. Epub 2015 Apr 16.
5. Braun JM, Schneider B, Beuth HJ. Therapeutic use, efficiency and safety of the proteolytic pineapple enzyme Bromelain-POS in children with acute sinusitis in Germany. *In Vivo* 2005;19:417-421.
6. Birdstall TC, Kelly GS. Berberine: Therapeutic potential of an alkaloid found in several medicinal plants. *Altern Med Rev* 1997;2:94-103.
7. Fukuda K, Hibiya Y, Mutoh M, et al. Inhibition of activator protein 1 activity by berberine in human hepatoma cells. *Planta Med* 1999;65:381-383.
8. Wu JF, Liu TP. Effects of berberine on platelet aggregation and plasma levels of TXB2 and 6-keto-PGF1 alpha in rats with reversible middle cerebral artery occlusion. *Yao Hsueh Hsueh Pao* 1995;30:98-102.
9. Abe N, Ebina, T, Ishida N. Interferon induction by glycyrrhizin and glycyrrhetic acid in mice. *Microbiol Immunol* 1982; 26:535-539.
10. Akamatsu H, Komura J, Asada Y, Niwa Y. Mechanism of anti-inflammatory action of glycyrrhizin: effect on neutrophil functions including reactive oxygen species generation. *Planta Med* 1991;57(2):119-121.
11. Licorice Root. Herbal Medicine: Expanded Commission E Monographs. *American Botanical Council*. 2000.
12. Coon JT, Ernst E. Andrographis paniculata in the treatment of upper respiratory tract infections: a systematic review of safety and efficacy. *Planta Med* 2004;70(4):293-8.
13. Cáceres DD, Hancke JL, Burgos RA, et al. Use of visual analogue scale measurements (VAS) to assess the effectiveness of standardized Andrographis paniculata extract SHA-10 in reducing the symptoms of common cold. *Phytomedicine* 1999;6:217-223.
14. Xia YF, Ye BQ, Li YD, Wang JG, He XJ, Lin X, Yao X, Ma D, Slungaard A, Hebbel RP, Key NS, Geng JG. Andrographolide attenuates inflammation by inhibition of NF-kappa B activation through covalent modification of reduced cysteine 62 of p50. *J Immunol* 2004 Sep 15;173(6):4207-17.
15. Melchior J, Spasov AA, Ostrovskij OV, et al. Double-blind, placebo-controlled pilot and phase III study of activity of standardized Andrographis paniculata Herba Nees extract fixed combination (Kan Jang) in the treatment of uncomplicated upper-respiratory tract infection. *Phytomedicine* 2000;7:341-350.
16. Thyme. Herbal Medicine: Expanded Commission E Monographs. *American Botanical Council*. 2000.

