

# Vascanox HP®

## Nitric Oxide Support\*

This information is provided as a medical and scientific educational resource for the use of physicians and other licensed health-care practitioners ("Practitioners"). This information is intended for Practitioners to use as a basis for determining whether to recommend these products to their patients. All recommendations regarding protocols, dosing, prescribing, and/or usage instructions should be tailored to the individual needs of the patient considering their medical history and concomitant therapies. This information is not intended for use by consumers.

**Vascanox HP® is a comprehensive, proprietary formula** that combines sources of dietary nitrates (potassium nitrate, beetroot extract, thiamine mononitrate) with various other berry extracts, vitamins, and minerals to promote healthy nitric oxide (NO) homeostasis.\* This product is designed to support multiple NO pathways in the body, particularly the enterosalivary pathway, and to promote NO production, storage, and bioavailability. By supporting multiple physiological pathways, Vascanox HP® can stimulate NO production for up to 24 hours with a single dose.\*†

†As measured by saliva NO test strips in an [open label published study](#).<sup>1</sup>



### Supplement Facts

Serving Size: 2 Capsules  
Servings Per Container: 30

	Amount Per Serving	%DV
Vitamin C (as Magnesium & Zinc Ascorbate)	180 mg	200%
Vitamin D3 (as Cholecalciferol)	20 mcg (800 IU)	100%
Thiamine (as Thiamine Mononitrate)	80 mg	6666%
Vitamin B12 (as Methylcobalamin)	100 mcg	4167%
Magnesium (as Magnesium Ascorbate & Oxide)	126 mg	30%
Zinc (as Zinc Ascorbate)	5.5 mg	50%
Potassium (as Potassium Nitrate)	140 mg	3%
Proprietary Noxa24® Blend	700 mg	†

Black garlic extract, beetroot extract, black current extract, bilberry extract, raspberry extract, blue honeysuckle berry extract, blueberry extract

† Percent Daily Value (%DV) not established

**Other ingredients:** Vegetarian capsule (hypromellose), rice bran extract, rice hull concentrate.

#### Formula Highlights

- Features dietary nitrates and precursors for endogenous hydrogen sulfide (fermented black garlic extract) for up to 24 hours of nitric oxide support.<sup>†</sup>
- Delivers vitamin C and polyphenols from berry extracts to promote NO production and bioavailability in the enterosalivary pathway.\*
- Features essential minerals (magnesium, zinc, and potassium) and vitamins (vitamin D, thiamine, and vitamin B12) to support NO homeostasis.\*
- Contains a blend of berry extracts to promote antioxidant status.\*
- Gluten-free, dairy-free, soy-free, non-GMO

#### Health Benefits\*

- Supports healthy nitric oxide metabolism
- Promotes cardiovascular health
- Supports and maintains healthy blood pressure
- Promotes healthy blood flow
- Supports antioxidant status

**Recommended Use:** Take 1-2 capsules in the morning, or as directed by your healthcare practitioner.

**Note:** Vascanox HP® is packaged in 60-capsule bottles, designed to last a month based on recommended dosage. It is recommended to evaluate nitric oxide status with Nitric Oxide Test Strips to determine personal nitric oxide status before and during use.

**Warnings:** Keep out of reach of children. Consult your doctor prior to use if you have a medical condition, take nitrate-based or hypertension medications, PDE5 inhibitors, or any other medication. Discontinue use if you feel dizzy or faint. Not recommended if pregnant or nursing.

Maintaining healthy NO status can promote cardiovascular health, normal blood pressure, and healthy blood flow. This may help to promote healthy circulation of oxygen and vital nutrients throughout the body and facilitate the clearance of metabolic by-products. NO production (primarily through eNOS) may decline with

age or in certain metabolic conditions. Although NO status may be supported through lifestyle changes including a nitrate-rich diet filled with beetroot and leafy greens, modern dietary habits and the variable nutrient density of fruits and vegetables may make Vascanox HP® an ideal adjunct to healthy eating and lifestyle habits.\*

**NITRIC OXIDE (NO)** is a messenger molecule with numerous bodily functions.<sup>1</sup> One of its primary functions is to serve as a vasodilator to promote increased blood supply to tissues and to relax the inner muscles of blood vessels, which promotes normal blood pressure (BP) and blood flow.<sup>1</sup> Healthy NO status helps attenuate the atherosclerotic process by decreasing monocyte adhesion and atheroma formation.<sup>2</sup> Clinical studies suggest impaired NO production, recycling through the oral microbiome, bioavailability, and/or activity is associated with endothelial dysfunction in cardiovascular disease, hypertension, obesity, and atherosclerosis.<sup>1,3-6</sup> Additionally, NO is a key factor for normal penile erectile function.<sup>7,8</sup> Disorders that reduce NO synthesis or release in the erectile tissue are commonly associated with erectile dysfunction.<sup>9</sup>

#### Optimizing NO Production: The 2 Major Pathways

Vascanox HP® supports optimal functioning of the two major pathways that work in tandem to maintain healthy NO homeostasis in the body: the classical or eNOS/enzymatic pathway and the enterosalivary pathway.\*

(See details in Figure 1). NO is endogenously produced from L-arginine, catalyzed by endothelial nitric oxide synthase (eNOS).<sup>1</sup> This endogenous pathway may decline with age or in certain conditions due to decreased eNOS synthesis.<sup>3,5,6</sup>

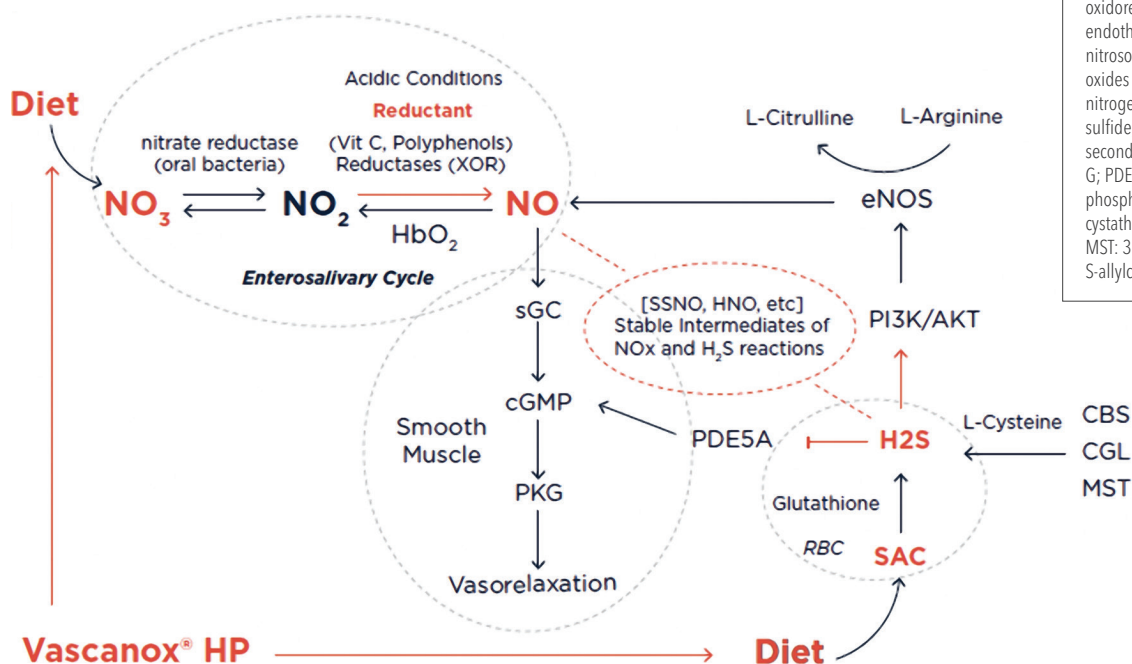
Vascanox HP® complements endogenous NO production by providing comprehensive support for the second major pathway—the enterosalivary pathway.\* This route is not impacted by age and is supported by dietary or supplemental intake of nitrates.<sup>5</sup>

The enterosalivary pathway starts when inorganic dietary nitrate (NO<sub>3</sub><sup>-</sup>) is digested and rapidly absorbed by the gastrointestinal tract, enters circulation, and is either excreted through the kidneys (~70%) or transported to the saliva glands (~25%), forming salivary nitrate. Salivary nitrate is reduced to nitrite (NO<sub>2</sub><sup>-</sup>) by commensal oral bacteria. Swallowed saliva then delivers nitrite into the stomach, where it is reduced to NO by the acidic environment and in the presence of endogenous reductants, such as vitamin C.<sup>1</sup> In addition to vitamin C, human studies suggest that polyphenolic compounds

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<sup>†</sup> Houston M, Chen C, D'Adamo CR, Papathanassiou AE, Green SJ. Effects of S-allylcysteine-rich garlic extract and dietary inorganic nitrate formula on blood pressure and salivary nitric oxide: an open-label clinical trial among hypertensive subjects. *Cureus*. 2023;15(9):e45369. doi:10.7759/cureus.45369

FIGURE 1: Pathways controlling nitric oxide synthesis and vasodilation. Hypothetical points of Vascanox HP<sup>®</sup> intervention are in red.



NO: nitric oxide; Vit C: vitamin C; XOR: xanthine oxidoreductase; HbO<sub>2</sub>: oxyhemoglobin; eNOS: endothelial nitric oxide synthase; SSNO: nitrosopersulfide; HNO: nitroxyl; NOx: nitrogen oxides to include nitrite, nitrate, and reactive nitrogen oxide intermediates; H<sub>2</sub>S: hydrogen sulfide; sGC: soluble guanylate cyclase; cGMP: second messenger cyclic; PKG: protein kinase G; PDE5A: phosphodiesterase type 5; PI3K/AKT: phosphoinositide 3-kinase/protein kinase B; CBS: cystathionine synthase; CGL: cystathionine-lyase; MST: 3-mercaptopyruvate sulfurtransferase; SAC: S-allylcysteine; RBC: red blood cell.

from berries may promote the reduction of nitrite.<sup>10</sup> Moreover, polyphenolic fruits, such as blueberries and bilberry, may serve as a source of eNOS-activating compounds and promote antioxidant status.<sup>11,12</sup> The enterosalivary pathway is associated with elevations in plasma nitrate and cyclic guanosine monophosphate (cGMP), a sensitive marker of bioactive NO production.<sup>6</sup>

In addition, Vascanox HP<sup>®</sup> provides precursors for endogenous production of a molecule synergistic with nitric oxide. Hydrogen sulfide (H<sub>2</sub>S), also a gaseous transmitter, has been shown to promote healthy NO homeostasis and vasodilation.<sup>1</sup> H<sub>2</sub>S may promote NO synthesis through eNOS-dependent and enterosalivary pathways to maintain elevated cGMP levels. H<sub>2</sub>S may also combine with nitrites to form stable intermediates that serve as NO stores found in muscles.<sup>1</sup> Compounds in garlic, including allicin and S-allyl-L-cysteine, act as H<sub>2</sub>S donors.<sup>13,14</sup>

Vascanox HP<sup>®</sup> supports the enterosalivary pathway by featuring sources of nitrate (beetroot extract, thiamine mononitrate, and potassium nitrate) and H<sub>2</sub>S (fermented black garlic extract) to synergistically promote NO homeostasis and bioavailability.\* It also features known reductants, including vitamin C and polyphenols, to support the conversion of nitrite to NO in the body.

### NOXA24<sup>®</sup> – The Key to Vascanox HP's Formulation

Vascanox HP<sup>®</sup> incorporates NOXA24, a proprietary formulation that stimulates natural NO production for up to 24 hours. NOXA24 achieves this result by supporting optimal function for both key pathways of NO production, with further additional endothelial benefits.

### Healthy NO Status and Blood Pressure

Approximately half of adults in the U.S. (45%) have uncontrolled hypertension, which is a major risk factor for cardiovascular disease.<sup>15</sup> An open-label clinical trial with 12 hypertensive participants aged 52 to 73 examined the effects of Vascanox HP<sup>®</sup> (2 capsules per day for four weeks) on NO bioavailability and BP. Salivary nitrite, a surrogate of NO bioavailability, and nitrate were diligently monitored using saliva NO test strips. The BP of participants was measured at baseline, two weeks, and four weeks in the clinic (in triplicate in the brachial artery) and twice daily at home with a blood pressure cuff.<sup>1</sup>

After four weeks of Vascanox HP<sup>®</sup> supplementation, all participants exhibited a statistically significant decrease in systolic BP by ~11 mmHg (p < 0.001) at two weeks, which persisted until the end of the trial. Half of the participants began with elevated diastolic BP, and in that subgroup diastolic BP also showed a significant reduction (p < 0.01). No such decrease was observed

in the participants with normotensive diastolic BP. All 12 participants had consistent, rapid increases of salivary nitrite concentrations over baseline at two hours post-administration, which slowly decayed but remained above the minimum therapeutic level in all participants after 24 hours.<sup>11</sup> This suggests that Vascanox HP<sup>®</sup> may promote healthy NO status up to 24 hours a day.\* However, these are preliminary results and further research is required to confirm.

Various clinical trials have further investigated the general clinical benefits of dietary nitrates to promote healthy BP.<sup>6,16</sup> A meta-analysis of 16 randomized, placebo-controlled trials (RCTs) with 254 participants examined the effects of dietary nitrate (between 157 mg and 1,488 mg per day) on BP. The researchers concluded that inorganic nitrate and beetroot juice consumption was associated with a statistically significant 4.4 mmHg reduction in systolic BP, with a non-significant, modest 1.1 mmHg decrease in diastolic BP.<sup>16</sup>

**Vitamin C** is included in Vascanox HP<sup>®</sup> due to its vital role in supporting vascular health.<sup>17</sup> Vitamin C is necessary for collagen synthesis, stimulating endothelial proliferation, inhibiting apoptosis, and scavenging free radicals.<sup>17</sup> As a potent antioxidant, vitamin C may help attenuate the oxidative stress and inflammation associated with vascular dysfunction.<sup>17</sup> Moreover, vitamin C helps the conversion of nitrite to NO in the enterosalivary pathway, thus helping to promote NO production, recycling through the oral microbiome, and bioavailability.<sup>18,19</sup> Vitamin C, either alone or in combination with nitrate consumption, has been shown in clinical trials to support NO production, healthy BP, and endothelial health in older adults and in individuals with cardiovascular risk factors.<sup>18-21</sup>

**Additional supportive nutrients** included in Vascanox HP<sup>®</sup> aid in supporting nitric oxide metabolism including production, storage, release, biotransformation, and transport, and many have beneficial effects on endothelial health independently as well.<sup>22-36</sup>

**Quality Controlled.** Calroy Health Sciences assembles Vascanox HP<sup>®</sup> using a Total Quality System, which includes strict compliance with cGMP's current good manufacturing practices as defined by the United States Food and Drug Administration. Batch and test records are maintained throughout the manufacturing process to ensure the guaranteed quality of the final product.

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Citations