

Santa Barbara Wellness for Life

Supporting You in Creating a Lifetime of Wellness, Vitality and Longevity

The Importance of Nitric Oxide (NO)

Nitric Oxide (NO) is a gas naturally produced by the body that is important for many aspects of health. It's most important function is vasodilation, meaning it relaxes the inner muscles of the blood vessels, causing them to widen and increase circulation. For this reason, it is one of the most researched molecules regarding the role it plays in supporting cardiovascular health. Nitric oxide production is essential for overall health because it allows blood, nutrients and oxygen to travel to every part of the body effectively and efficiently. NO has also been shown to act as a cell signaling molecule, affecting numerous activities of the nervous, immune, gastrointestinal and endocrine systems.

As we age, our bodies become less efficient at producing NO. In fact, by 40 years old, the enzyme function responsible for generating the active form of NO is reduced to about 50%. By 60 years old, enzyme function falls to only 15%. Certain medications are also known to decrease NO synthesis, including NSAID's, oral contraceptives, antibiotics, SSRI's, PPI's and antimicrobial mouthwash. Factors causing oxidative stress, like alcohol, nicotine, environmental toxins, pollutants and others also limit NO production. Additionally, sedentary lifestyles, certain genetic predispositions and chronic stress all adversely affect available levels of NO in the body.

Dietary nitrates are what the body uses to create NO. However, for the reasons mentioned above, patients often need levels of nitrates that would be very difficult to attain through diet alone. Fortunately we now carry a product that has sufficient levels of sodium nitrate in a highly bioavailable form, along with all the cofactors necessary for it's conversion first to nitrite then to NO within the body. This is the most effective and efficient way to increase NO production or availability in the body, making it an exciting intervention with enormous potential to positively impact many aspects of health.

Cardiovascular Health

Increased vasodilation decreases blood pressure, and supplementation with dietary nitrates has been shown to decrease blood pressure by up to 12.5/4.7 mmHg. A decrease of just 5 mmHg in a hypertensive patient can decrease stroke risk by up to 34%.

Sexual dysfunction

Prescribed medication for ED requires NO to be effective, which is why they only work in 50% of people. Women need NO to "feel". Lubrication is NO mediated.

Impaired Cognition / Neurogenesis

Optimizing circulation / microcirculation allows nutrient perfusion and elimination of waste products. BDNF, a protein critical for neurogenesis and nerve health, requires NO. NO is shown to be involved in neuroplasticity and long-term memory. Some NO precursors increase production of BH4, a cofactor needed for the generation of neurotransmitters.

Gut

NO governs mucosal blood flow and mucous thickness. Protects against leaky gut after antibiotic therapy.

Neuropathy / Diabetes

Diabetics have lower NO than normal. The receptors on cell surfaces that bring glucose out of the blood and into cells require NO. This is why there are cardiovascular complications in diabetics.

Hormones

Hormones have a strong effect on the pathways that stimulate NO production. Likewise, the presence of NO plays a role in some hormone regulation. NO triggers the pulsatile release of luteinizing hormone-releasing hormone (LHRH), which mediates luteinizing hormone (LH) release. When LH is released, it stimulates the production of steroid hormones from the testis (testosterone) and the ovaries (estradiol). Cortisol production in the adrenal glands is increased in the absence of NO. Cortisol is the only hormone that naturally increases with age. All of this has the effect of: increased BP, blood clotting and oxidative stress and decreased immune response. Cold extremities as a symptom in individuals with thyroid imbalance may be a result of NO deficiency.

Carbohydrate Metabolism and Insulin

NO is also emerging as a central regulator of energy metabolism and body composition. Impairment of NO synthesis is a central defect causing metabolic abnormalities associated with insulin resistance. Increasing NO output has remarkable effects on obesity and insulin resistance. For example, NO helps activate GLUT4 receptors for transport of glucose into the cells.

Nitric Oxide could extend fertility

NO appears to slow or reverse the aging of eggs in mouse ovaries. This finding suggests NO may help women in their 30's and 40's remain fertile longer and increase their chances of having healthy babies.

Signs and Symptoms of low NO production

Low brain endurance	Poor memory	Poor focus and concentration
Less stamina/endurance	Poor nail health	Fatigue or low energy levels
Fungal growth on toenails	Cold hands/feet	Irritability, Depression, or Anxiety
High Blood Pressure	Aches/pain in veins	Insomnia or difficulty sleeping
Decreased heart function	Muscle Cramps	Asthma, poor lung function
Swollen ankles, lower legs		