

Nitroxide (NO) inhibits Virus Replication

Nitric oxide (NO) is a widespread signalling molecule that participates in virtually every cellular and organ function in the body (1).

The main site of the molecule's synthesis is the inner layer of blood vessels. It relaxes blood vessels and due to this improves the blood flow in the heart and lowers the blood pressure.(2)

*In the immune system, nitric oxide is produced by macrophages, which are a type of leukocyte (white blood cell) that engulfs bacteria and other foreign particles such as viruses that have invaded the body. Nitric oxide is generated by phagocytes (monocytes, macrophages, and neutrophils) as part of the human immune response.(3) NO is also an effective component in the eradication of viruses. Viral replication is inhibited by the induction of iNOS and the subsequent production of NO. This has been shown for Deng Virus (4), HIV-1, coxsackievirus (5), influenza A and B, rhino virus, CMV and **Corona Virus**)(6).*

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How can we increase the endogenous NO production ? The source for NO is the amino acid L- Arginine. By the action of the enzyme Nitric Oxide Synthase (NOS) NO is formed from L- Arginine.

The enzyme NOS needs the coenzyme NADH (Nicotinamide Adenine Dinucleotide Hydride) for full functionality. As shown by Prof.T. Malinski (Ohio University) the increase of NO-synthesis by NADH supplementation is at least ten times greater than the effect of any other substance). (T. Mailinksi, personal communication).

In other words a combination of L-Arginine and NADH increase the endogenous NO production remarkably and can thus destroy the COV-2 virus in infected patients which have developed SARS.

There is a nutritional supplement available which contains L-Arginine and NADH, the brand name of which is NADH VISION.

[1] **The discovery of nitric oxide and its role in vascular biology.** Moncada S, Higgs EA. *Br J Pharmacol.* 2006;147 1:S193–201.

(2) **Nitrite as regulator of hypoxic signaling in mammalian physiology.** van Faassen, EE; Bahrami, S; Feelisch, M; Hogg, N; Kelm, M; et al. (Sep 2009). *Med Res Rev.* 29 (5): 683–741.

(3) **Cellular mechanisms of nonspecific immunity to intracellular infection: Cytokine-induced synthesis of toxic nitrogen oxides from L-arginine by macrophages and hepatocytes".** Green, SJ; Mellouk, S; Hoffman, SL; Meltzer, MS; Nacy, CA (1990). *Immunology Letters.* 25 (1–3): 15–9. PMID 2126524.

(4) **Antiviral action of nitric oxide on dengue virus type 2 replication.** Takhampunya R, Padmanabhan R, Ubol S; *J Gen Virol.* 2006 Oct; 87(Pt 10):3003-11.

(5) **Nitric oxide donors inhibit the coxsackievirus B3 proteinases 2A and 3C in vitro, virus production in cells, and signs of myocarditis in virus-infected mice.** Zell R, Markgraf R, Schmidtke M, Görlach M, Stelzner A, Henke A, Sigusch HH, Glück B, *Med Microbiol Immunol.* 2004 May; 193(2-3):91-100.

(6) **Nitric oxide inhibits the replication cycle of severe acute respiratory syndrome coronavirus,** S. Akerström, M. Mousavi-Jazi, J. Klingström, M. Leijon, A. Lundkvist, A.J. Mirazimi *Virol.* 79 (2005) 1966–1969.

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