

# Inflammation and the Biochemical Vicious Cycle

*Wesley G Bradford, MD, MPH*

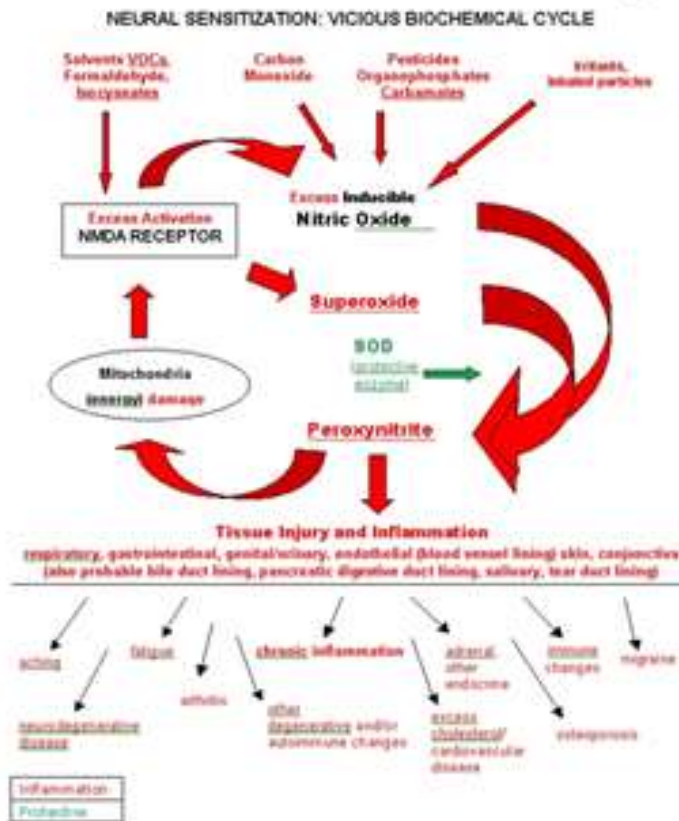
Tissue injury and inflammation on the molecular and cellular level can occur anywhere in the body, in response to toxic burden (usually gradually accumulating from chronic exposure), as well as by infections, autoimmune disease, and/or chronic stress. This process can cause progressive damage to the nervous system and endothelium (blood vessel lining), as well as the respiratory, gastrointestinal, and genitourinary systems, joints, skin, and conjunctiva (eyes). Chronic inflammation in these tissues can result in chemical and drug sensitivities, migraines, neurodegenerative disease, high cholesterol/cardiovascular disease, fatigue, aching, arthritis, osteoporosis, adrenal insufficiency, arthritis, and many other degenerative diseases.

This inflammation can become a vicious biochemical cycle of chemically-provoked excessive Nitric Oxide, which produces more Peroxynitrite, which damages cells and induces more Nitric Oxide. This process is programmed to destroy invasive pathogens, but chronic exposure to alien chemicals that the body was not designed to cope with can induce a progressive downhill spiral. Drugs cannot heal these vicious cycles, because drug molecules are also alien chemicals in the body and cannot repair damage. Successful repair requires using "original equipment" nutrient molecules that the body was made with.

## References:

1. Beckman JS, Crow JP. *Pathological implications of nitric oxide, superoxide and peroxynitrite formation. Biochemical Society Transactions, May 1993;21(2):330-334.*
2. Berckman JS. *The double-edged role of nitric oxide in brain function and superoxide-mediated injury. Journal of Developmental Physiology, Jan 1991;15(1):53-59.*
3. Delfino RJ, Staimer N, Gillen D, et al. *Personal and ambient air pollution is associated with increased exhaled nitric oxide in children with asthma. Environmental Health Perspectives, Nov 2006;114(11):1736-1743.*
4. Mar TF, Jansen K, Shepherd K, Lumley T, Larson TV, Koenig JQ. *Exhaled nitric oxide in children with asthma and short-term PM2.5 exposure in Seattle. Environmental Health Perspectives, Dec 2005;113(12):1791-1794.*

## INFLAMMATION – A Vicious Cycle:



Quench Peroxynitrites:

Gamma-tocopherol

*(blocked by Alpha-tocopherol)*

SOD Cofactors:

Zn, Cu, Mn

Calm NMDA:

Mg (Ca is excitatory)

Support Krebs Cycle

B's & Minerals

Support ECT

CoQ10

*(blocked by statins)*