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HUMMING FOR YOUR SENSES

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Sinus problems? Need to decrease congestion and stamp out unwanted inflammation? Try humming away your sinus problems. Repetitive humming might be Mother Nature's ticket to healthier and clearer sinuses.

Unless they become plugged up by allergies or infection, sinuses are an often-unappreciated "Plain Jane" component of our anatomy. These air-filled spaces tucked behind the forehead, cheeks and eyes help insulate the skull and decrease the weight you have to carry around on top of your neck. Normal human sinuses are sterile in contrast to nearby nasal passages teeming with all sorts of microorganisms, dust and pollen, which can make themselves at home once they dodge those thick nostril hairs – stage one of purifying inhaled air.

Anything that infects or irritates the nasal passages including bacteria, viruses, dust, and pollen can cause what street folks call “confusion.” And nasal confusion means an outpouring of mucus and other inflammatory responses of congestion that can cause sinus blockages. Sinuses, like sinks, work best with proper drainage. A sinus that has an opening blocked with mucus and isn’t draining normally isn’t a happy sinus – as anyone with sinusitis can attest.

The humming and sinus connection necessitates a short primer on nitric oxide chemistry. Do not flip this page yet: this is a head-start level lesson and not a high school chemistry class. Nitric oxide isn’t just some obscure chemical in a bottle. The prestigious journal Science proclaimed this gas the “Molecule of the Year” in 1992.

Nitric oxide – a simple chemical compound produced by the marriage of a nitrogen atom with an oxygen atom – is what chemists call a free radical because it’s very unstable when exposed to air. Nitric oxide shouldn’t be confused with its chemical cousins having similar-sounding names, such as nitrous oxide and the nitrogen oxides. These gaseous cousins have very different and distinguishing properties, just like a single letter change on an internet address leads to a different website. For example, nitrous oxide, commonly known as laughing gas, has two nitrogen atoms bound to a single oxygen atom.

Nitric oxide and nitrogen oxides are very closely related. A slew of various nitrogen oxides are pollutants that can irritate lungs and are associated with adverse atmospheric conditions from ozone levels to acid rain. Most nitric oxide in the atmosphere actually comes from unstable molecules of nitric oxide that spew into the air from about anything that burns, from cigarettes to gasoline. Once airborne and exposed to oxygen, the nitric oxide molecule quickly grabs a spare oxygen molecule and becomes a nitric oxide.

Noxious chemicals, just like toxic people, are best encountered in tiny amounts. Nitric oxide has important biochemical functions for living organisms, including humans. The body’s interactions with nitric oxide are multifaceted, complex and often seem contradictory, depending on the amount and rate by which it’s produced by various chemical microenvironments in the body.

As part of the body’s biochemical signal corps, nitric oxide is a busy molecular messenger that plays well with all sorts of other specialized cells in the body. When more blood flow is needed in a particular area, nitric oxide stimulates arteries to dilate, regulating blood pressure and blood flow. It can also run chemical interference, protecting against certain cell toxins. But it has an evil side and, under certain conditions, binds with other molecules to cause cell damage and premature cell death.

Our National Institute of Health is unlikely to fund medical research on a human activity as mundane as humming, and drug companies certainly aren’t interested. Sweden is the epicenter of humming research, with studies supported by the Swedish Research Board and the Swedish Heart and Lung Foundation. Swedish researchers first discovered that nitric oxide in our respiratory passages emanates from cells lining the walls of the nasal sinuses.

Exquisite sampling studies show very high concentrations of nitric oxide in nasal pathways at levels, if extrapolated, reaching federal government atmospheric pollution thresholds. Once air is sucked into the lungs or exhaled into the atmosphere, nitric oxide levels are diluted into miniscule concentrations.

As usual, Mother Nature had a plan as nitric oxide dilates blood vessels and the high levels found in the sinuses are toxic to bacteria giving the microbes a good blow as inhaled air moves into the inner passages of the lungs where extracted oxygen molecules meet the bloodstream. Fortunately, a high concentration of nitric oxide in the nasal passages is only one of many mechanisms in Mother Nature’s trick bag to suppress airborne bacteria. Otherwise, all the mouth-breathers with stopped up sinuses in New Orleans would be falling dead on the banquettes.

Subsequent studies and other research confirmed and expanded their findings. Out of 59 patients with recurrent allergic rhinitis, the lack of a surge of nitric oxide in exhaled air while humming served as a good marker for diagnosing bilateral obstruction of the sinuses. French researchers measured nitric oxide levels from persons with nasal polyps also finding that blocked sinuses led to low nitric oxide levels. People with cystic fibrosis also have low nitric oxide levels.

By 2002 these same Swedish researchers published some interesting data related to humming. They measured nitric oxide levels in exhaled air as 10 healthy young adults talked, hummed and just breathed. While humming, there was a 15-fold increase in nitric oxide levels compared to talking or just breathing.

Why does humming but not speaking cause more nitric oxide release? The Swedish researchers hypothesized that humming maximizes the amount of air oscillating through the sinuses. Air bouncing off the sinus walls stimulates the enzyme-rich cells lining the sinuses to produce more nitric oxide, which is then wafted out with exhaled air as long as there's a clear opening, or ostium, between the sinus and the nasal passages.

Dr. Edwin Ross is an otolaryngologist on the West Bank. He has been on the leading edge of endoscopic sinus procedures for years, and has seen more than his share of funky sinuses. According to Ross, a blocked sinus opening isn't the whole story for most folks with recurrent sinus symptoms.

"Cells lining the sinuses make a large quantity of mucus daily. Specialized cells called cilia work in tandem like rhythmic waves moving mucus through the ostia, the openings of the sinuses into the back of the nose. The continuous flow of mucus is more important clinically than whether an ostium is blocked. The lack of normal mucous clearance is responsible for most sinus disease." He continues, "Measuring gas flow from the sinuses, while scientifically interesting, will not aid in diagnosis. The key tests for chronic sinusitis include properly collected cultures to identify any offending organism and imaging studies looking for anatomical obstructions to function such as polyps, deviations and natural narrowings of nasal passageways."

As a diagnostic tool, most otolaryngologists agree with Ross that measurement of nitric oxide in exhaled air has little to offer on prime time. But does humming-generated nitric oxide help reduce sinus congestion symptoms? These weeks devoid of music between Jazz Fest and Essence are a good time to give your sinuses some quality time. Ventilate those sinuses with some daily humming and let me know if it helps.