

## NAC- More Bang for Your Buck

N-acetyl cysteine (NAC) is used all the time in my office to support four essential health related processes- lung, liver, circulation, and immune health. Recent studies exploring the chemistry of NAC illustrates that it has three main molecular mechanisms which interact with each other in a variety of ways. These mechanisms include direct antioxidant activity, di-sulfide bond breaking activity (helps with clearing mucus), and balancing neurotransmitters in the brain.

When we get a cold or some other pathogen, mucus is a by-product of that infection. When the mucus gets either overproduced or excessively thick, we suffer. NAC helps to break up that troublesome slime and thus can help make us feel better. Patients with chronic asthma or sinus infections always have issues with excess mucus production so NAC can help clear this up.

If prescription, NAC can help reduce liver damage from acetaminophen overdose. Dietary NAC can play a role in other types of toxic exposure. NAC helps to make one of the strongest antioxidants we have called glutathione. Glutathione helps with neutralizing chemicals that show up in our diet or the air we breathe. Glutathione helps with phase II liver deetoxification by clearing xenobiotics, such as chemicals in plastics and personal care products.

Once again we hear the word glutathione when it comes to the immune system. NAC's role in the regeneration of glutathione makes it important for immune health. Studies show that NAC can support the production of natural killer cells which plays a major role in or innate immune response. A recent randomized controlled trial found that supplementing with NAC supported cell mediated immunity and supported a healthy inflammatory response to seasonally acquired health issues and wellness through the winter months.

The last two processes are circulation and mental health. Once again, disulfide bonds show up. Apparently NAC helps with blood clotting factors and thus can help with circulation. When it comes to mental health we look at two things here. Inflammatory pathways and neurotransmitters, like dopamine. NAC acts as an antioxidant which in turn helps with inflammation. Some studies have shown that NAC has helped with dopamine regulation and therefore helped with healthy behavior and mood. More studies need to be done over time to confirm this evidence.