



N-Acetyl Cysteine (NAC)

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N-Acetyl Cysteine (NAC): The “Perfect” Antioxidant

N-Acetyl Cysteine (NAC) is an amino acid (AA) supplement with more relevant clinical trials than most any other nutrient. Already well recognized by the modern physician who uses NAC intravenously as an antidote to acetaminophen (“Tylenol”) toxicity and via nebulizer (inhalation) to treat patients with Cystic Fibrosis, the use of NAC has burgeoned recently and spread to almost all specialties. I look forward to sharing the compelling research on this amazing amino acid with the potential to help so many, so safely.

What It Is/What It Does

The N-acetyl derivative of the AA L-cysteine can easily cross cell membranes where it is converted to cysteine and then the powerful antioxidant glutathione. It is the far-reaching effect of glutathione regeneration and therefore powerful free radical-scavenging properties that gives NAC most of its therapeutic clinical effects. The poor absorption of glutathione as a supplement is what confers such a specific advantage to NAC (as compared to taking glutathione directly-orally) when treating a myriad of conditions.

Furthermore NAC improves the body’s clearance of the AA homocysteine and can also lower another well-recognized cardiovascular disease risk factor known as Lp (a). NAC also works as an anti-inflammatory by reducing the production of inflammatory mediators known as tumor necrosis factor alpha, interleukin 1, and NF Kappa Beta. Although such foreign sounding names may appear irrelevant to you, these inflammatory mediators appear to be the basis of some of the most vexing diseases of our day including Chronic Fatigue Syndrome/Fibromyalgia (CFS/FM) and even depression.

Of course NAC acts as a powerful mucolytic and a well-documented immunostimulator which provides the basic rationale for its use in acute and chronic lung and sinus conditions.

Clinical Conditions:

Always consult your health-care provider who is knowledgeable about nutritional supplements before treating yourself for any condition. Please note that NAC has no

known interactions with other supplements or medicines. At dosages less than 2000 mg per day there is no known toxicity, although higher dosages may be associated with gastrointestinal toxicity such as nausea and abdominal pain.

Depression

A current theory on depression that is gaining considerable attention links leaky-gut syndrome and chronic inflammation as the etiology for most depression. This link gains merit when we note that a minimum of 50% of our serotonin production occurs in the GI tract and most anti-depressant medicines not only modulate serotonin activity but also have an anti-inflammatory effect.

The use of NAC has been shown, when used in combination with other nutrients such as glutamine, to help heal leaky gut, act as an anti-inflammatory and restore cerebral glutathione levels, making it an optimal choice as an adjunctive therapy in depression.

Bipolar Affective Disorder (BAD)

Double-Blind, Placebo-Controlled Randomized Clinical Trials (DBPCRCTs) document profound benefits in treating BAD. Within eight weeks dramatic improvement in almost all quality of life indices were noted, maintained thru week twenty when the study was ended, but benefits were lost when treatment was terminated, as would be expected in such a short trial.

Schizophrenia

In a DBPCRCT NAC at 1000 mg twice per day, when added to maintenance medicines, improved clinical responses, normalized cerebral glutathione levels, and treated common medicine side-effects such as akathisia thereby proving how an integrative approach to such a challenging condition can reap remarkable benefits.

Addiction/Gambling

In yet another DBPCRCT when given to compulsive gamblers NAC dramatically reduced reward-seeking behaviors and normalized cerebral glutamate (an AA neurotransmitter) metabolism which provides a research avenue in the treatment of all addictions.

Neural Protection/Alzheimer's

Preliminary studies in animal models provide intriguing ideas for synergistic nutrient combinations including NAC, alpha lipoic acid, acetyl-L-carnitine, SAME, and others as powerful therapies in the prevention and treatment of stroke, dementia, neuropathies and all neurodegenerative conditions.

CFS/FM/Leaky Gut/IBS

These “overlap” conditions which should now include depression and possibly migraine have chronic inflammation and immune dysregulation at their heart. Appropriate diet with natural antioxidants and anti-inflammatories serve as the basis for the chronic and patient approach to these conditions. DBPCRCTs exist documenting the anti-inflammatory effects and clinical benefits of NAC in CFS.

Kidney Protection

NAC is one of the most renal-protective agents ever found and I prescribe NAC to anyone with kidney dysfunction as it can slow deterioration of function and protects my patients from a variety of insults from medicines and other toxins in the environment.

Fertility-Men

DBPCRCTs document that NAC and selenium (another glutathione enhancer) improves sperm count and motility in infertile men.

Fertility/Pregnancy-Women

DBPCRCTs show many profound benefits for women with unexpected recurrent pregnancy loss, preventing recurring preterm delivery, and improving ovulation and pregnancy rates in women with polycystic ovarian syndrome.

High Altitude Sickness

Improves glutathione levels and decreases symptoms of this condition.

Homocysteine Reduction

In dialysis patients NAC led to homocysteine reduction and a 40 % reduction in cardiovascular events. Most research on homocysteine reduction with the traditional B vitamins failed to lead to improved clinical outcomes as occurred with NAC in this study.

Bronchitis/COPD/Chronic Sinusitis

One can expect a 50% reduction in the exacerbations of these conditions simply by adding NAC, usually at a dosage of 600 mg twice per day. Both the mucolytic and immuno-stimulatory affects play a role.

At this time, no antioxidant nutrient has the backing of so many DBPCRCTs supporting its use. Believe it or not there are even more conditions for which NAC has a potential therapeutic role. But, alas, time is short and paper is a precious resource.

In Good Health,
Gary E. Foresman, MD

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