Memorial Sloan Kettering Cancer Center

PATIENT & CAREGIVER EDUCATION

N-Acetylcysteine

This information describes the common uses of N-Acetylcysteine, how it works, and its possible side effects.

Tell your healthcare providers about any dietary supplements you're taking, such as herbs, vitamins, minerals, and natural or home remedies. This will help them manage your care and keep you safe.

What is it?

N-acetylcysteine is used as a drug for acetaminophen overdose and to help break up mucus. It has not been proven to be an effective treatment for cancer.

N-acetylcysteine (NAC) is a dietary supplement derived from the amino acid L-cysteine. It is used as an antidote for acetaminophen overdose. As an antioxidant, it is thought to reduce DNA damage. NAC is also marketed for its liver-protective properties and to support healthy immune functioning.

In humans, NAC can dissolve and loosen mucus caused by some respiratory disorders. It has also been studied for several psychiatric disorders with limited success. Small trials suggest potential to reduce cancer-treatment toxicities, but it has not been shown to treat cancer. Additional studies are needed to determine safety and efficacy of NAC for various conditions.

What are the potential uses and benefits?

- **To treat drug-induced liver toxicity**
  NAC is an effective treatment for acetaminophen poisoning, which can be life-threatening. If liver toxicity is suspected, seek immediate medical attention for proper treatment.
- **To treat chronic lung disease**
  Study results are mixed. Some trials suggest it may reduce inflammation, flare-ups, or improve lung function, but benefits were not observed in other trials.
- **To treat depression**
  Results with NAC as add-on therapy for depression are mixed. Additional studies are needed.
- **To prevent and treat cancer**
  Small studies suggest this supplement might prevent certain pre-cancerous damage, but there is no proof that it can prevent cancer.

- **To reduce cancer treatment side-effects**
  A few initial studies suggest possible benefit, but more studies are needed to determine safety and effectiveness. One study cited unpleasant odor that was partly masked by diluting the product.

What are the side effects?

- Stomach upset
- Diarrhea
- Nausea
- Vomiting
- Fatigue
- Eye irritation
- Skin rash

Less common: Low blood pressure, anaphylactic shock, asthma attacks, headache

Case reports

Light sensitivity: Occurred in pulmonary fibrosis patients taking NAC in combination with pirfenidone. The reaction could not be explained by other variables such as location, season, or other medications taken at the same time.

What else do I need to know?

Patient Warnings:

- NAC is used as an antidote for liver toxicity caused by acetaminophen poisoning, which can be life-threatening. If acetaminophen overdose is suspected, seek immediate medical attention for proper treatment.

Do Not Take if:

- You are taking **nitroglycerin:** In humans, NAC can further reduce blood pressure and cause severe headaches.

Special Point:

- It is controversial whether antioxidants like NAC can lessen or negate cancer treatment effects. Because some cancer therapies work by creating free radicals that kill cancer cells, high levels of antioxidants may neutralize these effects and protect cancer cells from these therapies. So what protects healthy cells may protect cancer cells as well. Patients who are interested in taking antioxidants during therapy should consult with their oncologist.

If you have questions or concerns, contact your healthcare provider. A member of your care team will answer Monday through Friday from 9 a.m. to 5 p.m. Outside those hours, you can leave a message or talk with another MSK provider. There is always a doctor or nurse on call. If you're not sure how to reach your healthcare provider, call 212-639-2000.

For more resources, visit www.mskcc.org/pe to search our virtual library.

N-Acetylcysteine - Last updated on October 21, 2022