CHOLINE

WHAT IS CHOLINE?

Choline is nutrient similar to the B vitamins. It can be made in the liver. It is also found in foods such as meats, fish, nuts, beans, vegetables, and eggs.

Choline is most commonly used for liver disease. It is also used for memory, mental function, preventing certain birth defects, and many other conditions, but there is not good scientific evidence to support many of these uses.

LIKELY EFFECTIVE FOR...

- **Fatty liver disease**. People who receive nutrition through the vein can develop choline deficiency. Low blood levels of choline can cause fat to accumulate in the liver. Giving choline intravenously (by IV) helps treat this condition.

POSSIBLY EFFECTIVE FOR...

- **Asthma**. Taking choline by mouth seems to lessen symptoms and the number of days that asthma is a problem for some people. It also seems to reduce the need to use bronchodilators.
- **Neural tube birth defects (birth defects that involve the brain and spinal cord)**. Early research suggests that women who consume a lot of choline in their diet have a lower risk of having babies with a neural tube birth defect.

POSSIBLY INEFFECTIVE FOR...

- **Alzheimer's disease**. Taking choline by mouth does not reduce symptoms of Alzheimer's disease.
- **Athletic performance**. Taking choline by mouth does not seem to improve athletic performance or lessen tiredness during exercise.
- **A brain condition called cerebellar ataxia**. Most research shows that taking choline does not improve this condition.

LIKELY INEFFECTIVE FOR...

- **Age-related memory loss**. Taking choline by mouth does not improve memory in older people with memory loss.

- **Schizophrenia**. Taking choline by mouth does not reduce symptoms of schizophrenia.

INSUFFICIENT EVIDENCE TO RATE EFFECTIVENESS FOR...

- **Allergies (hayfever)**. Early research shows that taking choline by mouth does not reduce allergy symptoms as well as a prescription nasal spray.
- **Bipolar disorder**. Early research shows that taking choline by mouth might reduce some mood symptoms in people with bipolar disorder who are also taking lithium.
- **Bronchitis (inflamed lungs)**. Early research shows that inhaling choline solution might reduce symptoms of bronchitis caused by dust.
- **Mental performance**. Taking a single dose of choline before exercising does not seem to improve memory or thinking skills after exercising. Including choline in nutritional fluid that is injected in the vein does not seem to improve thinking skills.
- **Seizures**. There are reports that taking high doses of choline might be helpful for some people with a type of seizure called complex partial seizures.
- **Fetal alcohol spectrum disorder**. Giving choline by mouth does not seem to improve memory or thinking skills in children aged 2.5 to 5 years with this condition.
- **Infant and child development**. Some early research suggests that children of mothers who get more choline during pregnancyhave improved memory at the age of 7 years. It's not clear if children of mothers who get more choline during pregnancy have improved intelligence. Results from early research are conflicting.
- **Nonalcoholic fatty liver disease (liver disease not caused by alcohol)**. Low dietary intake of choline is linked with increased liver scarring in some people with this condition. But choline intake does not seem to affect the build-up of fat in the liver of people with this condition.
- **Postoperative pain (pain after surgery)**. Taking choline by mouth the night before and just before surgery does not seem to decrease pain after surgery.
- **Inability of the intestines to digest food and absorb nutrients (intestinal failure)**. People with intestinal failure often have low levels of choline. Taking choline by mouth does not seem to increase blood levels of choline in infants with this condition. But it might help increase choline levels in older children.
- **Depression**.
- **Hepatitis and other liver disorders**.
- **High cholesterol**.
- **Huntington's chorea**.
- **Tourette's syndrome**.
- **Other conditions**.

More evidence is needed to rate choline for these uses.

HOW DOES CHOLINE WORK?

Choline is similar to a B vitamin. It is used in many chemical reactions in the body. Choline seems to be important in the nervous system and for development of normal brain functioning. In asthma, choline might help decrease swelling and inflammation.

ARE THERE SAFETY CONCERNS?

Choline is **LIKELY SAFE** for most adults when taken by mouth or when given intravenously (by IV) in appropriate amounts. Taking high doses of choline by mouth is **POSSIBLY UNSAFE** for adults due to the increased risk of side effects. Doses up to 3.5 grams for adults over 18 years of age are not likely to cause unwanted side effects. Doses over 3.5 grams daily are more likely to cause side effects such as sweating, a fishy body odor, diarrhea, and vomiting.

Special Precautions & Warnings:

Children: Choline is **LIKELY SAFE** for most children when taken by mouth in appropriate amounts. Taking high doses of choline by mouth is **POSSIBLY UNSAFE** due to the increased risk of side effects. Doses up to 1 gram daily for children 1-8 years of age, 2 grams daily for children 9-13, and 3 grams daily for children 14-18, are not likely to cause unwanted side effects.

Pregnancy and breast-feeding: Choline is **LIKELY SAFE** when taken by mouth and used appropriately during pregnancy and breast-feeding. Doses up to 3 grams daily for pregnant and breast-feeding women up to 18 years of age, and 3.5 grams daily for women 19 years and older are not likely to cause unwanted side effects. There isn't enough information available about the safety of choline used in higher doses in pregnant or lactating women. It's best to stick to recommended doses.

Loss of bladder control: Taking choline in doses of 9 grams daily or more might worsen this condition.

ARE THERE ANY INTERACTIONS WITH MEDICATIONS?

Atropine Interaction Rating: **Minor** Be cautious with this combination.Talk with your health provider.

Taking choline with atropine might decrease the effectiveness of atropine.