Carnitine-Consumer

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Carnitine  
Fact Sheet for Consumers  
  
his is a general overview. For more in-depth information, see our health professional fact sheet.  
  
What is carnitine and what does it do?  
Carnitine is a nutrient found in many foods. Your body also makes carnitine. It helps turn the food you eat into the energy you need.  
  
How much carnitine do I need?  
Healthy people s bodies can make all the carnitine they need. Therefore, carnitine is not an essential nutrient, and experts haven t set a recommended daily amount.  
  
What foods provide carnitine?  
Many foods, especially animal foods, naturally contain carnitine. These include the following:  
  
Red meat is a good source of carnitine.  
Poultry, fish, and dairy have some carnitine.  
Vegetables, fruits, and grains have very small amounts of carnitine.  
What kinds of carnitine dietary supplements are available?  
Some dietary supplements contain carnitine either alone or combined with other ingredients. The two main forms of carnitine in dietary supplements are L-carnitine and acetyl-L-carnitine. Your body absorbs the carnitine from food much better than it absorbs carnitine from dietary supplements.  
  
Am I getting enough carnitine?  
Healthy children and adults make all the carnitine they need. However, certain groups of people might have low levels of carnitine because their bodies don t make enough:  
  
Babies born prematurely  
People with end-stage kidney disease  
People on kidney dialysis  
People with primary carnitine deficiency, a rare genetic disorder  
What are some effects of carnitine on health?  
Scientists are studying carnitine supplements to understand whether they affect health. Here are some examples of what this research has shown.  
  
Alzheimer s disease and dementia  
Studies of carnitine supplements in people with Alzheimer s disease or other forms of dementia have had mixed results. A few studies have shown that carnitine might help people with mild dementia or Alzheimer s disease. Other studies have shown only short-term improvements or no effect at all. More research is needed to understand whether carnitine supplements affect Alzheimer s disease and dementia.  
  
Heart disease and peripheral artery disease  
Studies of carnitine supplements for heart disease have had mixed results. Some studies have found that carnitine might reduce the risk of arrhythmias and angina but do not lower the risk of heart failure or heart attack. Other studies have shown that taking carnitine supplements for 6 months or longer might increase the risk of heart disease.  
  
Peripheral artery disease is a blood vessel disorder that causes leg pain and cramping. It is common in older people. Some studies have shown that carnitine supplements reduce leg pain during walking, but other studies have found no benefit. More research is needed to better understand the effects of carnitine supplements on heart health and peripheral artery disease.  
  
Insulin resistance and diabetes  
Insulin resistance is a condition in which your body doesn t properly use insulin, a hormone that controls blood glucose (also called blood sugar) levels. Insulin resistance increases the risk of type 2 diabetes. Some studies have found that carnitine supplements might help the body use insulin more effectively and might decrease blood glucose and A1C levels. Other studies have shown that carnitine might reduce cholesterol, but not triglyceride, levels in people with diabetes. However, these studies were small. More research is needed to better understand whether carnitine supplements help reduce the risk of insulin resistance and diabetes.  
  
Infertility  
Several studies have shown that carnitine supplements improve sperm health in men with infertility. However, carnitine does not appear to increase rates of successful pregnancy in their female partners.  
  
Carnitine supplements have also been studied for infertility in females who have polycystic ovary syndrome (PCOS). One study reported higher rates of ovulation and pregnancy and a lower risk of miscarriage in the individuals who took carnitine supplements plus an infertility drug compared with those who took the drug alone. Another small study found that carnitine supplements improved menstrual period regularity and ovulation and increased the chances of becoming pregnant but did not affect the risk of miscarriage. More research is needed to determine whether carnitine improves infertility or pregnancy rates in people with PCOS.  
  
Osteoarthritis  
Studies of carnitine supplements for osteoarthritis have had mixed results. One small study showed that carnitine helped reduce knee pain in middle-age women with osteoarthritis. Another small study in women with obesity and knee arthritis found that carnitine did not improve pain, stiffness, or ease of moving. Larger studies in more diverse groups of people are needed to understand whether carnitine supplements help osteoarthritis symptoms.  
  
Athletic performance  
Most of the carnitine in your body is stored in your muscles. Researchers are studying whether carnitine supplements help muscles work more efficiently, but studies examining if carnitine supplements affect athletic performance have had mixed results.  
  
In one small study of young recreational athletes, those who drank a liquid containing carnitine found that it was easier to complete a fitness and endurance test compared with those who drank the liquid without carnitine. In another small study of men, carnitine did not affect performance in a 1-hour cycling exercise, but it did slightly increase the amount of carnitine stored in the muscles of the men who followed vegetarian diets. In other research in trained athletes and active adults, carnitine supplements improved performance and shortened exercise recovery time in some studies but not in others. More research is needed to better understand whether carnitine supplements improve athletic performance.  
  
Weight loss  
Because carnitine helps turn the food you eat into the energy you need, researchers have studied whether carnitine supplements can help people lose weight.  
  
Studies of carnitine supplements in middle-age adults with type 2 diabetes have had mixed results. One 6-month study found no effect on weight loss, but another study found that those who took the weight-loss drug orlistat plus carnitine supplements for 1 year lost an average of 4 pounds more than those who only took orlistat. Other studies also found that people who took carnitine supplements lost more weight than people who didn t take them, but the difference was small only a few pounds. Larger studies are needed to better understand the effects of carnitine supplements on weight loss.  
  
Can carnitine be harmful?  
Carnitine in foods and beverages is safe. Therefore, carnitine doesn t have an upper limit. However, taking 3 grams or more a day of carnitine as a dietary supplement can cause nausea, vomiting, stomach cramps, diarrhea, and a fishy body odor. High amounts can also cause muscle weakness in people with chronic kidney disease and can increase the risk of seizures in people who have a seizure disorder.  
  
Does carnitine interact with medications or other dietary supplements?  
Some medications can affect carnitine levels in your body. Here are two examples:  
  
Long-term use of some antibiotics, such as pivampicillin, used to prevent urinary tract infections, can lower the amount of carnitine in your body.  
Anticonvulsant medications, such as phenobarbital and valproic acid, can reduce blood levels of carnitine.  
Tell your doctor, pharmacist, and other health care providers about any dietary supplements and prescription or over-the-counter medicines you take. They can tell you if the dietary supplements might interact with your medicines or if the medicines might interfere with how your body absorbs, uses, or breaks down nutrients such as carnitine.  
  
Carnitine and healthful eating  
People should get most of their nutrients from food and beverages, according to the federal government s Dietary Guidelines for Americans. Foods contain vitamins, minerals, dietary fiber, and other components that benefit health. In some cases, fortified foods and dietary supplements are useful when it is not possible to meet needs for one or more nutrients (e.g., during specific life stages such as pregnancy). For more information about building a healthy dietary pattern, see the Dietary Guidelines for Americansexternal link disclaimer and the U.S. Department of Agriculture s MyPlateexternal link disclaimer.  
  
Where can I find out more about carnitine?  
For general information on carnitine  
Office of Dietary Supplements Health Professional Fact Sheet on Carnitine  
  
For more advice on choosing dietary supplements  
Frequently Asked Questions: Which brand(s) of dietary supplements should I purchase?  
  
For information about building a healthy diet  
MyPlateexternal link disclaimer  
Dietary Guidelines for Americansexternal link disclaimer  
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