

Choline is the Key - To Optimizing Everyday Energy



VitaCholine®

Balchem's VitaCholine is the premier brand of choline, an essential nutrient for all human life stages. Choline is critical to the healthy structure and function of the human body and plays multiple roles:

- **Building Block** – it is an integral part of cell development, maintenance and genetic regulation
- **Messenger** – as acetylcholine, it speeds messages in the brain and to the muscles
- **Metabolic Defender** – it helps prevent fat accumulation in the liver by moving it out for conversion into energy

Adequate choline intake is fundamental to good health, but **90% of people** do not get sufficient choline through diet alone. Prolonged choline deficiency can result in muscle damage and an accumulation of fat in the liver¹, making it vital for people to get their daily requirements via dietary choices.

Maintaining Your #1 Performance Vehicle

While we don't all drive a sports car, everyone definitely appreciates the convenience of having reliable transportation. That's why so many people take great pains to maintain their car – because they've felt the pain and inconvenience of not having it available when they needed it.

Ultimately, the most important vehicle that gets you through your busy day is your body itself. Just as a car takes fuel and converts it into horsepower via combustion, our bodies are constantly transforming the food we eat to extract the energy we need to keep us active and alert. After we've eaten, our food is converted into fats, proteins, and carbohydrates, and then into energy through a series of complex reactions in our cells. That energy helps power our muscles, our brain and a host of other body systems that get us through our busy daily routine.

So what's the bottom line? We all need to make sure that our body is firing on all cylinders and producing the most horsepower possible, both physically and mentally. That's where choline comes in.

Choline: The Fuel Pump

We need choline to help us get the most of our food and to help provide the fuel that keeps us going strong. Choline's role in fat metabolism is critical to good liver health, because it packages lipids and mobilizes them for conversion to energy. Much as a fuel pump moves gasoline to the engine for combustion, choline exports triglycerides from bulk storage in the liver. So not only does it keep the fuel flowing, it also helps reduce the unhealthy accumulation of liver fat.

Choline: Filtering Impurities

Another important function of choline is to help our body get the most out of the B vitamins. Choline and the B vitamins perform a number of complementary functions, so one can stand in if the other is in short supply. Both the B vitamins and choline help manage homocysteine, a kind of 'spot rust' that can accumulate the body. Choline actively converts homocysteine into the benign amino acid methionine, which is used to repair and build proteins. By taking over primary responsibility for homocysteine management, choline allows the B vitamins to focus on converting nutrients into energy. Without enough choline, the B vitamins are forced to do both of these jobs, reducing efficiency and potentially overtaxing our energy production.

Choline: Shifting Into High Gear

One of the things that people appreciate in a car is responsiveness – knowing that your actions are immediately translated into motion. As acetylcholine, that's exactly the way that choline functions in the body by helping our brain efficiently and quickly send messages throughout the body, particularly at the interface with muscles.

Acetylcholine is one of the body's key 'instant messaging' molecules which helps transmit signals from the brain to the muscles and get the body moving. With adequate levels of acetylcholine, the brain is able to work efficiently and keep the lines of communication operating at a high level. This is the #1 job for choline – if intake levels are too low to support acetylcholine production, the body will scavenge choline from other areas. That's why people on low choline diets are more prone to developing muscle damage and accumulated fat in the liver than those who get sufficient choline.

VitaCholine®: For a Healthier You

The VitaCholine product line consists of a range of high quality choline salts which can be easily added during manufacturing to help fortify foods and beverages, infant formula and dietary supplements. These are just a few of the benefits that VitaCholine can bring to your products:

- Six structure-function claims in the U.S. and three in the E.U.
- Proven quality and safety
- Broad regulatory acceptance worldwide
- Stable from processing through finished product
- Flavorless and highly bioavailable
- Compatible with other nutrients
- SQF II, Kosher certified, and Halal certified



VitaCholine®: Essential Nutrition for Energy

¹ Zeisel and da Costa, Nutrition Review, 2009



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