

# ACETYL L-CARNITINE— Extreme Mitochondria Makeover

by Gina Ladinsky

Americans have been educated by the sugary words of advertising campaigns to pick foods that promote a form of malnutrition at the cellular level, and the effects show up as we age. The physical symptoms range from lack of energy to lack of memory. Unable to stop busy lives, shoppers don't take the time to create meals that contain fresh and nutritionally healthy ingredients.

Even magazines that are supposed to be looking out for your health are carriers of self-defeating advertising. In a study published in 2000 in the *American Journal of Clinical Nutrition*, researchers at Queens College in New York found that in a group of health-orientated magazines, 30 percent of food advertisements promoted fats, oils and sweets. Grain, fruit and vegetable advertisements only amounted to 6 percent.

Energy-dense, nutrient-poor foods provide an energy kick, along with a lot of calories, but they do not provide nutrients for our cells that are vital to our health, especially as we grow older—and they promote premature aging. Yet, many Americans still choose to consume these comfort foods. Now our cells are starving.

The populations most likely to be damaged by micronutrient deficiencies include the baby boomers, elderly, poor, obese, and people with degenerative dysfunctions, such as Alzheimer's and Parkinson's diseases. Multiple vitamin and mineral supplements like Centrum might appear to be easy, relatively inexpensive ways to ward off the

complications of living in the fast lane. But simplistic approaches are not enough anymore.

These approaches simply ignore the science of nutrition that is paying off with real results. We need to harness the power of this science.

Breakthrough scientific evidence proves that the effects of aging at the cellular level can be reversed by adding a supplement that can be

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bought at most health food stores. Acetyl L-carnitine (ALC) reverses damage to the mitochondria, the powerhouses of the cell, turning back the mitochondrial clock to an earlier time.

Taking ALC reverses damage not only from a poor diet, but simply from the fact that with age, according to a strong body of scientific evidence, mitochondrial decay takes place no matter how many fruits and vegetables are eaten.

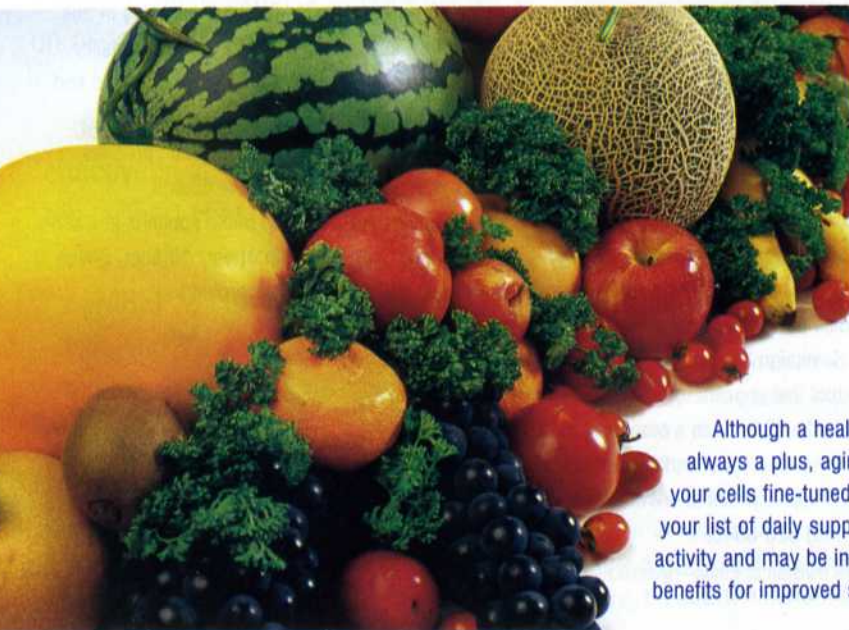
## ALC'S TIME HAS COME

Recent studies on the effects of aging as well as on cognitive dysfunction and degenerative diseases suggest the addition of ALC to daily diets can make a difference.

The time to begin taking ALC depends on multiple factors, including age and eating habits. In general, a good time to start is around age 40. Even with the best intentions, mitochondrial damage is an unavoidable aspect of aging.

In a study done at UC Berkeley's Lester Packer Laboratory, ALC reversed aging at the cellular level in biological studies conducted by the legendary Dr. Bruce Ames, a professor of molecular and cell biology. Ames refers to the problem as micronutrient malnutrition.

Although a healthy diet that includes plenty of fruit and vegetables is always a plus, aging and cellular oxidation are impossible to avoid. So keep your cells fine-tuned and functioning at their highest level by adding ALC to your list of daily supplements. ALC is also considered to have cardioprotective activity and may be indicated for use in strokes and Down's syndrome, and its benefits for improved sperm motility are being considered as well.





According to the University of Washington, ALC is produced naturally in humans and can be found in the brain, liver and kidneys but tapers off as we age. ALC is the acetyl ester of the amino acid L-carnitine, which transports fatty acids into the mitochondria. Once the fatty acids are transported to the mitochondria, energy is produced in the form of adenosine triphosphate (ATP). Ninety percent of the oxygen we breathe is metabolized via the mitochondria and the results are twofold: First, energy for our bodies is produced as ATP; second, oxygen metabolism causes oxidation or the formation of free radicals—problem molecules that attack nearby healthy molecules, causing damage to cells.

Free radicals can cause heart disease, liver disease, some cancers, and degenerative diseases. For example, damaged nerve cells in the brain are believed to contribute to both Parkinson's and Alzheimer's. ALC helps to reduce this type of cellular decay. Certainly it's a strong candidate for more studies to consider whether it should be put into the nutrition regimens of people at risk for these conditions.

To further demonstrate the effects of ALC, the aged rats in an experiment showed decreased spatial memory compared with young rats. However, with the addition of oral ALC, the aged had restored some of their spatial memory function.

In addition, the study observed that with age, motivation and locomotor activities may decrease. Although these are not indicators of cognitive function, the improvement of motivation and locomotion can add to cognitive results. As a result of this study, it is suggested that reversing mitochondrial decay through the supplementation of ALC may reverse age-associated declines in nervous, cardiovascular, visual and auditory systems as well as improve motivation and physical strength. These are all positives that work toward keeping us healthy as we age. ALC is truly an anti-aging workhorse. ■

References available at [www.freedompressonline.com](http://www.freedompressonline.com).



## MRM's Liquid Acetyl L-Carnitine

There is neither a single supplement that can meet all the needs of a human body nor one supplement that is the right choice for every single person. Rather, supplements need to be adjusted according to the needs of the recipient. Metabolic Response Modifiers (MRM) has created a liquid supplement of ALC just for the very reason that liquids are most easily absorbed by aging digestive tracts. MRM is a company that is driven by the highest values to create products that are of the best quality at the best prices; its liquid ALC is no exception.

MRM spent over two years in an effort to find the best liquid delivery system to provide enhanced absorption. MRM did its research and knows that with age more than mitochondria decline. For example, digestion becomes more difficult. With a liquid delivery, absorption is fast and complete. Currently, MRM is the only company that offers a liquid supplement of ALC.

As recent research suggests, ALC can help reverse oxidative mitochondrial decay, making it one of the most important anti-aging supplements today.

MRM's Acetyl L-Carnitine Liquid is available at health food stores and from health professionals. To find a store near you, contact MRM at (800) 948-6296 or visit [www.mrm-usa.com](http://www.mrm-usa.com).

## ALC and ALA Combo Effect

While it has been proven that ALC alone reverses mitochondrial damage due to aging, by combining ALC with alpha-lipoic acid (ALA), an antioxidant that is naturally found in the mitochondria, the result is significant.

In fact, in three articles of the *Proceedings of the National Academy of Sciences*, Dr. Ames and his colleagues reported that with the two supplements not only did the lab animals do better on the memory tests, they also had exhibited pep.

Ames stated, "With the two supplements, these old rats got up and did the Macarena."

He went on to report that from the research team's observations, the old animals looked more like young ones—on a physiological level.

While ALC reverses the damage to the mitochondria due to aging, the antioxidant ALA limits the damage by free radicals. The research teams concluded that by tuning up the mitochondria with both supplements, the onset of age-related problems can be delayed, and the combination can possibly reverse damage that has already occurred.



## Alzheimer's and ALC—The Latest Findings

In a study conducted at the University of Pittsburgh, School of Medicine, in 1995, it was found that AD patients who were given ALC instead of a placebo showed significantly less deterioration in the neuropsychological tests used in the study. Another study by Italian researchers was published in the *American Academy of Neurology* in 1991. The effects of one year of oral treatment with ALC in 130 AD patients was studied. Although the disease progressed, the group treated with ALC showed a slower rate of deterioration, including better scores on 13 out of 14 outcome measures, such as logical intelligence, long-term verbal memory, and selective attention. There is also preliminary evidence that ALC can slow mental decline in the elderly who do not have dementias.