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**Reduced plasma vitamin C levels linked with greater BMI, body fat percentage, and waist circumference**

A report published in the July, 2007 *Journal of Nutrition* described research conducted by Arizona State University which found that men and women whose vitamin C levels were low had a greater body mass index (BMI) and waist circumference than those with higher levels of the vitamin.

Carol S. Johnston, of Arizona State's department of nutrition and her associates recruited 35 men and 83 women aged 20 to 60, of whom 24 percent were categorized as overweight and 54 percent as obese. Height, weight, body fat mass and waist circumference were measured, and dietary questionnaires were evaluated for the intake of macro and micronutrients. Blood plasma samples were analyzed for vitamin C and adiponectin, a protein secreted by adipose tissue that is lower in obese than nonobese individuals. Having a low level of adiponectin is a risk factor for coronary artery disease, type 2 diabetes, and metabolic syndrome. The decline of adiponectin in obesity is caused by an alteration in gene expression induced by oxidative stress.

The research team discovered that higher levels of plasma vitamin C were associated with lower body mass index, body fat percentage, and waist circumference. Plasma vitamin C was related to the women's adiponectin levels after controlling for vitamin C supplement use and age, however, this association disappeared after controlling for body mass.

In an additional experiment in which 20 obese men and women were placed on a vitamin C deficient lowfat diet and given 500 milligrams vitamin C or a placebo for 8 weeks, both groups lost weight and experienced an increase in adiponectin. However, the authors note that a larger trial found that three grams per day vitamin C was associated with greater weight loss than a placebo after six weeks, "hence, the outcome of our trial may have been limited by a small sample and the level of supplementation."

It is not known whether obesity lowers vitamin concentrations due to increased oxidative stress, or whether the vitamins affect the accumulation of lipids in fat cells. Earlier research conducted by the team found a significant reduction in fat oxidation during exercise among individuals whose plasma vitamin C levels were inadequate. Vitamin C is needed for the body's synthesis of carnitine, which, when impaired, is associated with a decrease in the oxidation of fat and an increase of lipid accumulation in muscle.

"Plasma vitamin C was inversely related to adiposity, particularly in women, and this association was independent of body mass and age," the authors conclude. "Because one-third of Americans have marginal plasma vitamin C concentrations, this is an important observation, worthy of further investigation."

Health Concern

**Obesity**

For weight loss, these easy steps can be taken every day:

1. Before each meal, take one of the following:
  - 8–9 g of Enhanced Fiber Food Powder (flavored or unflavored) or
  - 8–9 g of High Lignan Flax seed powder or
  - 3–6 capsules of PGX soluble fiber blend
2. Take 200–600 mcg of Chromium daily.
3. Take 160–320 mg of Magnesium citrate daily before bedtime.
4. Take 3000–4000 mg of CLA (with or without 1000 mg guarana) daily.
5. Take 2400 mg of EPA/DHA with sesame lignans daily.
6. Take 200 mg of 7-keto DHEA daily in the morning.
7. Take 725–1450 mg of Green Tea extract (minimum 93 percent; caffeinated or decaffeinated) daily.
8. Minimize consumption of foods cooked at high temperatures.
9. Consume most calories early in the day (avoid late-night snacking).
10. Reduce intake of high glycemic foods (breads, pasta, potatoes, fruit juices, sugary snacks).
11. Reduce intake of saturated fats such as those found in beef and butter, and increase consumption of foods rich in omega-3 fats, such as fish.
12. Increase consumption of fresh fruits and vegetables.

[http://www.lef.org/protocols/metabolic\\_health/obesity\\_01.htm](http://www.lef.org/protocols/metabolic_health/obesity_01.htm)

## Featured Products

### Chromium Polynicotinate Capsules

Chromium is an essential trace mineral that has been shown to promote cardiovascular health. Along with regular exercise, 400-600 mcg of chromium polynicotinate has been shown to support healthy weight control in overweight women.

<http://www.lef.org/newshop/items/item00169.html>



### Vitamin C with Dihydroquercetin

Because humans do not manufacture vitamin C internally, it must be obtained through dietary sources or supplements. Few people realize, however, that vitamin C is a water soluble nutrient that is quickly oxidized and excreted by the body, which limits its efficacy. Until now, those seeking to capture vitamin C's optimal health benefits have had no choice but to consume it several times throughout the day.

Fortunately, a flavonoid antioxidant known as dihydroquercetin functions as a vitamin C "supercharger". Studies demonstrate that dihydroquercetin acts to inhibit the oxidation of vitamin C, thereby helping to maintain its concentration and to recycle vitamin C throughout the body. This synergistic relationship between dihydroquercetin and vitamin C greatly enhances the efficacy of both molecules in the body's organs and tissues.

<http://www.lef.org/newshop/items/item00981.html>



## Life Extension

### The UltraSimple Diet

Did you know that eating carbs is the single MOST important action you can take to both lose weight and optimize your health? Sounds unbelievable, but it's true. Mark Hyman, M.D., author of the NY Times best-seller *UltraMetabolism*, has just come out with a follow-on book named *The UltraSimple Diet -- Kick-start Your Metabolism and Safely Lose up to 10 Pounds in 7 Days* in

which he describes exactly why this is the case.

The two primary causes of being sick and overweight are inflammation and toxicity. Special chemical compounds called phytonutrients that are found in plants help the body to detoxify and minimize inflammation. People forget that "carbs" include vegetables, which are plants, and not just white bread, flour and sugar, which is what people typically think of. By focusing on these two underlying causes -- toxicity and inflammation -- the body automatically takes care of everything else from there, leading to weight loss, clearer skin, more energy, better sleep and improved health.

Go to <http://www.ultrasimpdiet.com> to download a free sneak preview of the book now.

If you have questions or comments concerning this issue or past issues of *Life Extension Update*, send them to [ddye@lifeextension.com](mailto:ddye@lifeextension.com) or call 954 202 7716.

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