

# HOLLY HILL HEALTH FOODS

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## Natural Insights for Well Being®

July 2023

### Heart & Metabolism

L-carnitine and astaxanthin support human biology

#### L-carnitine helped regulate lipids and metabolism

People take L-carnitine supplements to help regulate blood sugars and fats, but no major review of studies has evaluated these effects. In what doctors say is the first meta-analysis of its kind, researchers identified 15 random placebo-controlled trials on L-carnitine's effects on insulin resistance, fasting blood glucose, lipid metabolism, and liver enzyme levels.

Overall, compared to placebo, those taking L-carnitine saw average decreases in mg per deciliter of blood (mg/dL) for triglycerides, down -11.08 vs. -3.22; for total cholesterol, -6.45 vs. -2.95; and for LDL cholesterol, -8.28 vs. -5.47. For glucose factors, fasting blood sugar declined an average of -4.94 vs. -2.82. Insulin levels declined -0.99 vs. -0.56 microunits per milliliter, and insulin resistance decreased -0.58 vs. -0.38. Liver function also improved, with an inflammatory liver enzyme, alanine transaminase (ALT), decreasing -19.71 vs. -2.96 IU per liter for placebo.

#### Astaxanthin improves metabolism in obesity

Earlier studies found astaxanthin reduced oxidative stress and enhanced lipid metabolism during exercise, and reduced inflammation in obesity. In this



study, 68 men with obesity, average age 28, took a placebo, took high-intensity physical training, or took 20 mg of astaxanthin per day, with or without training, which included 36 one-hour high-intensity function exercises over three weeks.

The best results were for those who took astaxanthin along with exercise. Weight declined from an average of 209.6 to 194.4 pounds. Fat mass decreased from 32.1 to 27.6 percent. Body mass index scores declined from 33.8 to 31.8. LDL cholesterol decreased from 129 to 112.5 mg/deciliter of blood, and triglycerides decreased from 244.9 to 214.8. Fasting blood sugar levels dropped from 105 to 75.5 mg/dL.

REFERENCE: FOOD & FUNCTION; 2023, No. 5, 2277

JULY'S

### Healthy Insight Astaxanthin for Exercise

Intense physical training and competition increase inflammation, oxidative stress, and impair the immune response. In this study, 18 healthy runners, aged 18 to 57, took a placebo or 8 mg of astaxanthin per day for four weeks prior to running 2.25 hours at 70 percent maximum oxygen capacity, including 30 minutes at a 10-percent downhill slope.

A day later, astaxanthin had not altered muscle soreness or inflammation, but did preserve plasma levels of 82 immune-related proteins, especially immunoglobulins, which control immune functions such as the primary antibody response to exercise induced stressors.

REFERENCE: FRONTIERS IN NUTRITION; 2023, VOL. 10, No. 1143385

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# Bone

## Probiotics, vitamins K and D, protect bone

### Probiotics improve postmenopausal bone density

As women reach postmenopause, bone mineral density can decrease one to two percent. In this study, 53 postmenopausal women, average age 58, took a placebo or 8-billion colony-forming units of a lactobacillus-based probiotic.

After six months, bone mineral density at the femur neck—the narrow upper portion of the thigh bone that connects to the hip—had increased 4 percent, with no change for placebo. Levels of osteocalcin, a protein that binds with calcium to mineralize bone, remained stable for probiotics while decreasing for placebo.

Discussing the findings, doctors said femur neck fractures are more

serious than osteoporotic spine fractures because they often require surgery.

### Vitamins K and D support bone in IBD

People with inflammatory bowel diseases (IBD) such as Crohn's and ulcerative colitis have increased chances for bone loss, and may be deficient in vitamins K and D. In this study, doctors measured vitamins K and D in the diets of 193 participants with IBD, and 199 without.

Both IBD and non-IBD groups got insufficient amounts of vitamin D; 53.1 and 63.2 percent of the U.S. RDA, respectively. For vitamin K, the IBD group got 78.7 percent of the RDA while the non-IBD group got

138.8 percent. Those with Crohn's or ulcerative colitis were severely low in vitamin K.

Doctors suggested, to avoid exacerbating symptoms, those with IBD may limit certain dairy and green leafy vegetables, which are high in K and D, and those with IBD can easily reverse inadequate dietary levels by taking nutritional supplements.

**REFERENCE:** JOURNAL OF BONE METABOLISM; NOVEMBER, 2022, VOL. 29, NO. 4, 225-33



# Muscle

## Synbiotics and vitamin D support muscle function

### Synbiotics reduced fibromyalgia symptoms

The latest theory on fibromyalgia (FM) is overstimulated nerves trigger brain and spinal cord changes that increase pain-signaling chemicals and widespread muscle and joint pain. In this study, 15 women with FM,



about half of whom also had chronic fatigue syndrome (CFS) took a pre- and probiotic combination containing 200 mg of fructooligosaccharides plus 1-billion colony-forming units of lactobacilli- and bifidobacteria-based probiotics per day.

After one month, women with FM but not CFS saw decreased levels of inflammatory factors, and beneficial changes in the hypothalamic-pituitary-adrenal axis that boosted cortisol levels, helping regulate inflammation levels. All the women also reported less stress, anxiety, fatigue, and symptoms of depression.

### Vitamin D preserves muscle strength

Muscle power typically declines with age, partly due to muscle atrophy

and exacerbated by low vitamin D levels. This study on aging included 3,205 participants, aged at least 50, who entered the trial with normal muscle mass and function.

Over four years of follow-up, doctors measured hand-grip strength several times; a good proxy for overall muscle strength. Those deficient in vitamin D, with levels below 30 nanomoles per liter of blood (nmol/L) or 75 nanograms per milliliter (ng/mL), were 70 percent more likely to develop muscle weakness compared to those whose vitamin D levels were above 50 nmol/L or 125 ng/mL.

Doctors said maintaining good vitamin D levels helps preserve physical function and the capacity to live independently longer.

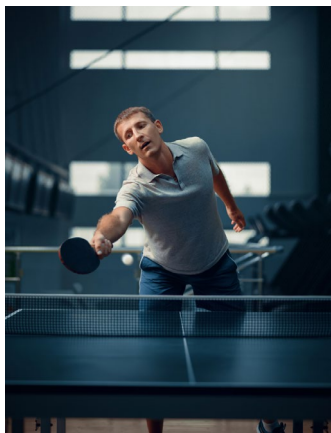
**REFERENCE:** NUTRIENTS; 2023, VOL. 15, NO. 7, 1591

# Nerve

## Carotenoids and branched-chain amino acids support neural function

### Carotenoids improve eye-hand coordination after VDT use

Extended exposure to a visual display terminal (VDT) can reduce tear production and increase eye-muscle strain and fatigue. In this study, 64 men and women, aged 20



to 60, who routinely played video games, used computers, or performed VDT activities, took a placebo, or a combination of the following carotenoids: 6 mg of astaxanthin, 10 mg of lutein, plus 2 mg of zeaxanthin per day.

After eight weeks, those in the carotenoids group saw significant improvement in eye-hand coordination after VDT operation. Doctors also measured carotenoid levels in the macula of the eye, known as macular pigment ocular density (MPOD), which increased significantly.

### BCAA levels may signal early AD

Low levels of the essential branched-chain amino acids (BCAA)

isoleucine, leucine, and valine may signal the early stages of Alzheimer's disease (AD). In this study, doctors used genetic data and obtained total BCAA levels from 115,047 participants in a United Kingdom biobank.

Researchers did not find that low BCAA levels caused AD, but rather the reverse: that AD appeared to reduce the level of BCAAs. Doctors compared BCAA levels in participants with AD to BCAA levels in other participants without AD to identify the significant link.

Reviewing the results, doctors concluded decreased levels of BCAAs may be a marker for early diagnosis of AD and believe BCAAs play a role in healthy nerve-signaling, energy production, and protein synthesis.

**REFERENCE:** NUTRIENTS; 2023, VOL. 15, NO. 6, 1459

# Pregnancy

## Pro- and synbiotics and B vitamins support mother and child

### Pro- and synbiotics reduce gestational diabetes

During pregnancy, glucose and lipid metabolism can become imbalanced, with some women developing gestational diabetes (GD). This review of 11 random-controlled trials covered 779 women with GD, with no other metabolic diseases, who had not taken pro- or synbiotics before or during pregnancy. The studies included a comprehensive spectrum of lactobacilli, bifidobacteria, and streptococci pro- and synbiotic strains.

Compared to placebo, the pro- and synbiotics groups saw fasting blood sugar levels decline an average of -2.33 mg/dL; fasting insulin decline -2.47 milliunits per liter; significant decreases in insulin resistance, and -6.59 mg/

dL average decline in total cholesterol levels. Doctors believe pro- and synbiotics act directly to restore gut flora balance.

### Vitamin B6 and folate link to low birth weight

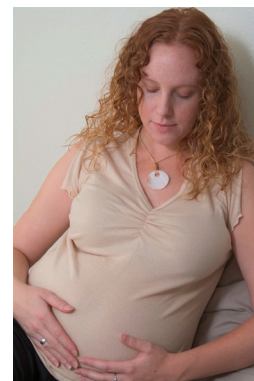
Mothers' nutrition plays a key role in healthy birthweight, and doctors believe vitamin B6 and folate in particular have a direct influence. In this study, doctors measured vitamin B6 and folate levels in 300 women, aged 18 to 45, who were between 24 and 32 weeks pregnant.

Overall, 10.4 percent of the women were low in vitamin B6 and 42 percent were low in folate. Following the women through birth, doctors found a significant link between low B6

and folate levels and low birthweight. Nearly half the women were also low in vitamin B12, with no association to low birthweight.

Doctors recommend supplementing with B6 and folate before and after conception to prevent low birthweight.

**REFERENCE:** NUTRIENTS; 2023, VOL. 15, NO. 6, NU15061375



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## Breathe!

### Carotenoids preserve respiratory health

#### Colorful pigments in foods extend life

This study measured carotenoid levels in a large national sample of U.S. adults and compared to chances for respiratory disease and death. Doctors evaluated dietary calories, supplements and foods containing carotenoids, including vitamins C and E, fruits, and vegetables. Researchers considered lifestyle and demographic factors that could influence the results, including regular exercise, smoking, drinking, age, sex, marriage, education, and income.

Overall, compared to those who got the least carotenoids, those who got the highest levels of total carotenoids, alpha-carotene, beta-cryptoxanthin,

lutein, lycopene, and zeaxanthin were 33 to 52 percent less likely to develop chronic bronchitis, emphysema, or to die from respiratory disease.

Good carotenoid levels reduced chances for respiratory disease and death regardless of lifestyle and demographic factors.

**REFERENCE:** BRITISH JOURNAL OF NUTRITION; 2023, 1-33, PMID 37039482



## Your Good News!®

We're dedicated to discovering the benefits of good nutrition and healthy lifestyle, and hope this issue of Natural Insights for Well Being® informs and inspires you to take an active role in your health. Please ask us to assist you with any natural products you would like to know more about.

These articles provide nutritional information only and do not replace professional medical advice.

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