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## EDITOR'S NOTES:

### The Holy Grail of Nutrition: Feet, Forks and Fingers

Nutrition has never been so hot. Diet topics are national news. Fad diet books continue to make the best-seller list. Television shows feature weight loss camps with diet advice freely given. And, the internet is a virtual tidal wave of nutrition information. We have never had so much access to diet advice, yet Americans are fatter and eat worse than ever.

A large part of the problem is while nutrition information is freely available, there is more misinformation and more conflicting information than ever. First saturated fat is bad for you. Now it is fine, but sugar is the problem. Agave syrup is a good substitute for table sugar. Oh wait, actually it is worse than high fructose corn syrup. Low fat diets are the best for weight loss, then high-fat/low carbohydrate diets are touted as the sure-fire way to lose and maintain weight. Or, maybe it is Weight Watchers and the Mediterranean diet that is your best sure-fired way to lose those extra pounds? Numerous food-combining diets have come and gone, as have body-type diets, blood-type diets, and so on. It is easy to throw up our arms and say, "I give up. I'm going to eat whatever I want because the experts can't figure out what's what!"

As I've discussed in previous columns, nutrition is not a black-and-white science. There always will be varying opinions and scientific findings that conflict and confuse. But, there is a solution. Instead of focusing on where experts (and fad diet gurus) differ, let's look at what the vast majority of studies agree upon. To use a term coined by Dr. David Katz, let's look at "Feet, Forks and Fingers."

The research overwhelming supports ten basic lifestyle habits that lower disease risk by almost 100%. Of those, three account for approximately 80% of all age-related, chronic diseases: exercise (feet), diet (forks), and smoking (fingers). People who exercise daily and sometimes vigorously, eat nutritious diets, and don't smoke are at very low risk for disease.

When it comes to Forks, there are three diet habits that consistently lower disease risk, including cancer, diabetes and heart disease, the three main causes of suffering and death in the United States. Those three diet habits are: 1) 100% whole grains, 2) colorful vegetables, and 3) colorful fruit. Study after study finds that when people eat mostly 100% whole grains and load every plate with colorful produce, they lower their risk for heart disease by 80%, diabetes risk drops by up to 90%, and cancer risk is reduced by 60%. That goes for men, women, children and elderly, and all races.

The studies have been done in every country throughout the world. A study from Sun Yat-Sen University in China concludes that vegetables lower all chronic diseases (*Molecules* 2015;20:21138), while a study from Curtin University in Australia found that vegetables lower pancreatic cancer (*Cancers* 2015;7:2309). Researchers at Emory University in Atlanta conclude that vegetables lower non-alcoholic fatty liver disease (*Hepatobiliary Surgery and Nutrition* 2015;4:161) and a study from the University of Liverpool in the UK found that a vegetable-rich diet creates a healthy mix of bacteria in the gut that in turn lowers disease risk. Whole grains reduce the risk for the same disease that refined grains promote, including heart disease, diabetes, hypertension, and even obesity.

It's simple. Skip the hype and the conflicting news stories. Focus on Feet, Forks and Fingers. Exercise daily, load every plate with colorful produce, switch from refined to whole grains, and don't smoke.

Elizabeth Somer, M.A.,R.D.



Elizabeth Somer

### What Works, What Doesn't

While poor nutrition is a leading cause of disease and obesity, some recommendations are founded in science, and some aren't, state researchers at Tufts University in Boston. First, the researchers warn that we must focus on the overall diet, not individual nutrients, since the complex interactions of different foods and ingredients are far more important than simply counting calories or milligrams. The scientific evidence supports diets rich in colorful fruits and vegetables, nuts, legumes, fish (especially fatty seafood), yogurt, and minimally processed whole grains. Other foods should be limited, such as red meat, processed meats, foods rich in refined grains, starch, and added sugars, salt, and trans fats. More investigation is needed before recommendations can be made when it comes to probiotics, coffee, tea, tropical oils, and eggs. There is little or no evidence to support at this time other popular trends, such as organic, grass-fed, and non-genetically modified (GMO) foods.

*Mozaffarian D: Dietary and policy priorities for cardiovascular disease, diabetes, and obesity: A comprehensive review. Circulation 2016;January 8th.*

#### INSIDE THIS ISSUE:

- Fat football players .....2
- Magnesium for your heart.....3
- Food and cognition.....4
- Nutrients for vision.....5
- Carnitine and autism.....6
- Diet and ovarian cancer.....7



## B Skin Healthy

A form of the B vitamin, niacin, might ward off skin cancer, according to a study from the University of Sydney in Australia. Placebos or supplements of nicotinamide (500 milligrams 2X/day) were taken by 386 patients with an average age of 66-years and who had at least two non-melanoma skin cancers during the past five years. Dermatologists checked for skin cancer every three months during the one-year study. Results showed that new non-melanoma skin cancer rates were down 23% in the supplemented group compared to the placebo group. The vitamin supplement also appeared to reduce the number of thick, scaly patches of skin that can become cancer. Those patches were reduced by 11% within three months of supplementing, and by 20% by nine months of treatment. These benefits quickly disappeared during the study's follow-up period. "When people stopped taking their tablets, the benefits no longer were seen.... you need to continue taking the tablets...for them to be effective," said the researchers. No adverse side effects were noted.

**IN PERSPECTIVE:** UV light from the sun damages the DNA of skin cells,

## Zinc and Immunity

Supplementing seniors with zinc boosts immune function and lowers infection risk, according to a study from USDA Human Nutrition Research Center on Aging at Tufts University in Boston. Blood zinc levels were measured at baseline in 25 seniors, aged 65-years-old and older, after which the participants were given daily either multi-vitamins with 5 milligrams zinc (placebos) or multi vitamins containing 30 milligrams of zinc. At the end of the three month study, blood zinc levels had increased in the zinc supplemented group by 16%, but only 0.7% in the placebo group. Zinc supplementation also improved functioning of immune cells, such as T cells.

*Barnett J, Dao M, Hamer D, et al: Effect of zinc supplementation on serum zinc concentration and T cell proliferation in nursing home elderly. American Journal of Clinical Nutrition 2016; January 27th.*

*depletes the energy that skin cells need to repair damaged DNA, and suppresses the immune system, thus hampering the body's ability to fight off cancer. Previous studies have shown the nicotinamide might provide skin cells with an "energy boost," enhancing DNA repair and strengthening the skin's immune system. While more research is needed, this is a ray of hope, since skin cancer is the most common form of cancer in the U.S., with about 5 million cases treated every year.*

*Chen A, Martin A, Choy B, et al: A phase 3 randomized trial of nicotinamide for skin cancer chemoprevention. New England Journal of Medicine 2015;373:1618-1626.*

## DASH Still Ranks #1

For the sixth year in a row, the Dietary Approaches to Stop Hypertension, or DASH, diet ranked #1 by a panel of health experts as the best overall eating plan. This diet was designed to lower blood pressure and cholesterol levels by limiting fats, red meat, and sugar in favor of healthy 100% whole grains, lean poultry, low- or nonfat milk products, and nuts. It also was the easiest to stick with. The panel was comprised of dietitians and physicians specializing in diabetes, heart health, and weight loss. They evaluated 38 of the most popular or trendy diets this past year and ranked them in nine categories. DASH scored the highest in all categories, while the MIND diet tied for second place with the cholesterol-lowering TLC diet. The MIND diet includes some features of the Mediterranean diet and the DASH diet, such as high consumption of fruits, vegetables, and fish. The Biggest Loser and the DASH diet came in second and third, respectively, in the diabetes category. The Weight Watchers diet ranked highest for weight loss. The Raw Food diet and the low-carb Atkins diet scored poorly overall and ranked low in categories, such as "Best Diets for Healthy Eating." The Paleo diet tied with the Dukan diet for #36, leaving only one diet worse than that - the Whole30 diet.

<http://health.usnews.com/best-diet/best-overall-diets>

## The Final Solution for the Biggest Loser

Researchers at McMaster University in Ontario might have found the answer to losing fat and gaining muscle, but you're not going to like it. They placed 40 young, unfit, overweight men on a one-month program of intense exercise that included weight training, a very-low-calorie-diet, and varying amounts of protein. Typically, people lose some muscle as they drop pounds. However, while the vigorous weight training helped maintain muscle in the lower-protein group, the high-protein group lost more weight and increased muscle. They lost 10.5 pounds of fat during the four-week study and gained 2.5 pounds of muscle, compared to the lower protein group who lost 8 pounds of fat. Both groups got stronger, fitter, and generally in better shape. "We expected the muscle retention, because exercise, particularly lifting weights, provides a signal for muscle to retain even when you're in a calorie deficit, but we were surprised by the amount of additional fat loss in the higher protein consuming group."

*Longland T, Oikawa S, Mitchell C, et al: Higher compared with lower dietary protein during an energy deficit combined with intense exercise promotes greater lean mass gain and fat mass loss. American Journal of Clinical Nutrition 2016; 2016;January 27th.*

## Football Players: Fat and Unhealthy?

A study from Grand Valley State University in Michigan found that some football players, from the NFL to the college teams, may be more fat than fit. The researchers found that the average football player has gained up to one pound per year since 1942, equating to an average 60-pound gain in body mass for offensive and defensive linemen. That excess body mass, especially around the middle, has increased the risk for high blood pressure, diabetes, cardiovascular disease, and metabolic syndrome. The weight gain results from eating more and from the use of growth-promoting anabolic steroids.

*Potteiger J, McGowan-Stinski M: Protecting the metabolic health of football players with high fat mass. Strength and Conditioning Journal 2015; 37:95.*



## Minerals and Cancer

Some minerals, such as calcium and zinc, might help lower the risk for developing esophageal cancer. Researchers at the National Cancer Institute in Bethesda, Maryland compared mineral intakes with esophageal cancer risk in a group of 47,405 people. More than 200 cases of esophageal cancer were identified. Calcium intake was inversely associated with cancer, with risk decreasing for every additional 100 milligrams of calcium consumed daily. Zinc intake also showed a small, but statistically insignificant protective effect against the disease.

*Hashemian M, Poustchi H, Abnet C, et al: Dietary intake of minerals and risk of esophageal squamous cell carcinoma. American Journal of Clinical Nutrition 2015;102:102-108.*

## Load Up on D Before Surgery

Low vitamin D levels prior to weight-loss surgery are linked to greater post-surgery complications, according to researchers at Johns Hopkins University in Baltimore. More than 930,000 bariatric operations performed in the United States between 2001 and 2010 were reviewed. Post-surgery complications were rare, with fewer than 1% of patients developing infections. However 71% of complications leading to extended hospitalizations occurred in the winter and north of latitude 37 degrees, roughly South Carolina, where sun exposure, and therefore vitamin D synthesis, is low. In these sun- and vitamin D-deprived regions, more than twice as many patients experienced delayed wound-healing complications, as well as more wound separation and wound infections, in the winter. The researchers conclude that, "...[with] the growing rates of obesity and increased popularity of bariatric surgeries...primary care clinicians and bariatric surgeons should consider screening their patients and correcting any confirmed vitamin D deficiency."

*Petersen L, Canner, Cheskin L, et al: Proxy measures of vitamin D status - season and latitude - correlate with adverse outcomes after bariatric surgery in the nationwide Inpatient Sample, 2001-2010. Obesity Science & Practice 2015; December 22nd.*

## Magnesium for the Heart

Low blood levels of magnesium increase the risk for death from cardiovascular disease, according to a study from the University Medical Center Rotterdam, The Netherlands. Blood levels of magnesium and risk for heart disease were monitored for 8.7 years in a group of 9,820 men and women with an average age of 65.1 years-old. Blood magnesium levels were divided into four categories from low to high. Results showed low blood levels of magnesium (< 0.80 mmol/L) were associated with a 36% increased risk for cardiovascular death. Low magnesium also was associated with subclinical atherosclerosis and

altered heart rate.

**IN PERSPECTIVE:** Several studies show an inverse correlation between magnesium and cardiovascular risk. High magnesium intake also might lower the risk for stroke and high blood pressure, while low magnesium intake appears to increase a person's risk for arrhythmias and heart attack. Finally, a few studies show that magnesium combined with aspirin therapy might provide an additional benefit in preventing blood clots.

*Kieboom B, Niemeijer M, Leening M, et al: Serum magnesium and the risk of death from coronary heart disease and sudden cardiac death. Journal of the American Heart Association 2016; January 22nd.*

### Do You Get Enough Magnesium?

Probably not. Research shows as many as three out of every four Americans consume diets low in this essential mineral. Include several servings a day of the following, or make sure your supplement contains at least 300 milligrams.

| Food                 | Serving  | Amount of Magnesium (mg) |
|----------------------|----------|--------------------------|
| Quinoa               | 1/2 cup  | 180                      |
| Wheat germ, toasted  | 1/2 cup  | 180                      |
| Spinach, cooked      | 1 cup    | 157                      |
| Swiss chard, cooked  | 1 cup    | 150                      |
| Black beans, cooked  | 1 cup    | 121                      |
| Almonds              | 1/4 cup  | 105                      |
| Avocado (Florida)    | 1        | 104                      |
| Halibut              | 3 ounces | 91                       |
| Kidney beans, cooked | 1 cup    | 80                       |
| Oatmeal, rolled oats | 1 cup    | 56                       |
| Peanut butter        | 2 Tbsp.  | 50                       |
| Spinach, raw         | 1 cup    | 44                       |
| Brown rice           | 1/2 cup  | 42                       |

**Magnesium**    0        50        100        150        200

## Go Vegan for the Prostate

Prostate cancer accounts for more than 27% of all cancers among men and is the second most common cancer in men. Researchers at Loma Linda University in California report that following a vegan diet might help side-step this disease. Dietary patterns were compared to prostate cancer incidence among 26,346 men. The diets included: nonvegetarian, lacto-ovo

vegetarian, pesco-vegetarian, vegan, and semi-vegetarian. A total of 1,079 cases of prostate cancer were identified. Those men following vegan diets had a 35% lower risk for developing prostate cancer.

*Tantamango-Bartley Y, Knutsen S, Knutsen R, et al: Are strict vegetarians protected against prostate cancer? American Journal of Clinical Nutrition 2016; 103:153-160.*



## Omega-3s and B Vitamins: The Cognition Combo

The combination of B vitamins and the omega-3 DHA improves cognition, according to a study from the University of Oslo in Norway. A previous study in people with mild cognitive impairment (MCI) had found that B vitamin supplementation lowered homocysteine levels and slowed the rate of cognitive decline. The researchers used data from this study to see if baseline omega-3 status interacted with B vitamin treatment in 266 patients with MCI. Results showed that patients who had been treated with B vitamins and also had good omega-3 status at the start of the study showed the best cognition, while 60% of those treated with B vitamins

who had low omega-3 status showed no benefits from B vitamin supplementation. Higher blood levels of the omega-3 DHA significantly enhanced the cognitive effects of B vitamins, while levels of the omega-3 EPA were less effective. The researchers conclude that, "...when omega-3 fatty acid concentrations are low, B vitamin treatment has no effect on cognitive decline in patients with MCI, but when omega-3 levels are in the upper normal range, B vitamins interact to slow cognitive decline."

*Oulhaj A, Herneren F, Refsum H, et al: Omega-3 fatty acid status enhances the prevention of cognitive decline by B vitamins in mild cognitive impairment. Journal of Alzheimer's Disease 2016; January 6th.*

## Vitamin D and MS

High daily doses of vitamin D helped lower immune responses associated with multiple sclerosis (MS) symptoms, according to a study from Johns Hopkins Multiple Sclerosis Center at the university's School of Medicine. Forty patients with MS supplemented for six months with either 10,400 Units or 800 Units daily of vitamin D. Blood tests at the beginning and again at three and six months measured vitamin D levels and the response in the immune system's T cells, which play an important role in MS. Results showed that the patients taking the high dose of vitamin D had a significant reduction in the percentage of inflammatory T cells related to MS severity. When the increase in blood vitamin D levels was greater than 18ng/ml over starting levels, then for every additional 5ng/ml increase in vitamin D, there was a 1% decrease in the percentage of T cells in the blood. Patients taking the low dose of vitamin D showed no changes in T cells. Further studies will show whether this decrease in T cell activity results in a reduced severity of disease symptoms.

**IN PERSPECTIVE:** Previous studies show that low vitamin D blood levels are associated with an increased risk of developing MS. In addition, people with MS who

also have low vitamin D levels are more likely to have a greater disability and more disease activity.

*Sotirchos E, Bhargava P, Eckstein C, et al: Safety and immunologic effects of high- vs low-dose cholecalciferol in multiple sclerosis. Neurology 2015; December 30th.*

## Seafood and Your Brain

The omega-3s in fatty fish lower the risk for dementia and Alzheimer's disease, according to a review of studies from researchers at Zhejiang University in China. The researchers included 21 studies on omega-3 intakes in this meta-analysis for a total of 181,580 participants and 4,438 cases of people with mild cognitive impairment, cognitive decline, dementia, Alzheimer's disease, and/or Parkinson's disease. Results showed that as little as one serving of fatty fish a week was enough to show a reduced risk for dementia and Alzheimer's disease. Intakes of at least 1,000 milligrams of the omega-3 fat DHA was associated with a 14% lower risk of dementia and a 37% lower risk for Alzheimer's disease.

*Zhang Y, Chen J, Qiu J, et al: Intakes of fish and PUFAs and mild-to-severe cognitive impairment risks. American Journal of Clinical Nutrition 2015; December 30th.*

## Shame on Them!

Food companies market children's junk food high in sugar and low in nutrients to parents by using subtle messages of family bonding, according to a study from Dartmouth College. Almost 75% of total air time for ads featuring children's sugar-sweetened drinks targeted parents. All of the ads for this junk food included messages about nutrition or health benefits, even though the products are actually linked to obesity, dental decay, and other health problems. The researchers conclude, "This marketing strategy consists of a one-two punch, with the children's ads aiming to increase the likelihood of a purchase request from the child, and the parent advertising aiming to undermine the parent's ability to say 'no' to the request!"

**IN PERSPECTIVE:** Honestly, doesn't this go beyond the notion of "buyer beware" and border on criminal activity?!

*Emond J, Smith M, Mathur S, et al: Children's food and beverage promotion on television to parents. Pediatrics 2015; November 9th.*

## Breakfast of Champions

Children who eat breakfast do better in school, state researchers at the University of Cardiff in Wales. The researchers reviewed diets and school performance of more than 3,000 students between the ages of 9- and 11-years-old. They found that those kids who ate a healthy breakfast scored higher on SAT tests and were up to two times as likely to achieve at least average grades compared to those who skipped breakfast. The researchers conclude that, "...this study...offers the strongest evidence yet of links between aspects of what pupils eat and how well they do at school, which has significant implications for education and public health policy."

*Littlecott H, More G, More L, et al: Association between breakfast consumption and educational outcomes in 9-11-year-old children. Public Health Nutrition 2015; September 28:1-8.*



## Dark Greens Save Vision

A diet rich in dark green leafy vegetables could protect your eyes from developing glaucoma, according to a study from Brigham and Women's Hospital in Boston. Approximately 64,000 women from the Nurses' Health Study and 41,000 people from the Health Professionals Follow-Up Study were included in the study. During the 25-year-follow up, almost 1,500 people developed glaucoma. Risk was compared to consumption of dark green leafy vegetables, with intakes divided into five categories from highest to lowest. Those people who included the most dark green leafies in their diets averaged about 1.5 servings (about 1 ½ cups) a day. Those eating the least amount averaged one serving every three days. Results showed that those people consuming the most dark green leafies every day had a 20% to 30% lower risk of glaucoma.

**IN PERSPECTIVE:** Previous research shows that dark greens are an excellent source of lutein and zeaxanthin, two carotenoids that lower the risk for macular degeneration and cataracts. Greens also are a source of nitrates, which boost nitric oxide levels in the blood, which improves blood flow. There is data that people with glaucoma have impaired nitric oxide production in the eyes. Future research needs to clarify if one of or a combination of these benefits is the reason why dark greens lower glaucoma risk.

Kang J: JAMA Ophthalmology, online January 14th, 2016.

**HOT TOPICS:** In a study of 335,054 women from the European Prospective Investigation into Cancer and Nutrition (EPIC), researchers from numerous research institutions conclude that diets rich in colorful vegetables lower breast cancer risk. *American Journal of Clinical Nutrition* 2016;103:168-177.

Women with periodontal disease might be at higher risk for breast cancer, according to a study from the University at Buffalo's School of Public Health in New York. *Cancer Epidemiology, Biomarkers & Prevention* 2015; December 21st.

## A Cure for Dry Eyes

### Tears are made up of three layers



Lipid (oil) layer

Aqueous (water) layer

Mucin layer

Glands in the eyelids, called Meibomian glands create the protective lipid (oil) layer of the tear film

Researchers at Keio University School of Medicine in Tokyo might have discovered a cure for dry eyes. Placebos or supplements containing fish oil, lactoferrin, zinc, lutein, gamma aminobutanoic acid, and vitamins C and E were given to 40 volunteers between the ages of 22- and 59-years-old.

Tear production was assessed in the volunteers at the start and at weeks four and eight. In a second study, rats received the combined dietary supplement while dry eye was induced. Results showed that the supplements improved tear production in the rats as well as in the volunteers with confirmed dry eye.

Researches at Hallym University College of Medicine in Seoul report that low vitamin D status and inadequate sunlight exposure are associated with an increased risk for dry eye syndrome.

**IN PERSPECTIVE:** Itching, burning, irritation, redness and excessive tearing are all symptoms of one of the most common eye problems - dry eye syndrome. More than 10 million Americans suffer from dry eyes. This condition is usually caused by a problem with the quality of

the oily tear film that lubricates the eyes and helps prevent evaporation of the eye's natural moisture. However, one of the most common reasons for the eyes to be dry is aging. The human body produces 60 percent less oil at age 65 than at age 18. And studies have found that this effect is more pronounced in women, especially during and following menopause, who tend to have drier skin than men. Without as much oil to seal the watery layer, the tear film evaporates much faster, leaving dry areas on the cornea.

Kawashima M, Nakamura S, Izuta Y, et al: Dietary supplementation with a combination of lactoferrin, fish oil, and enterococcus faecium WB200 for treating dry eye. *The Ocular Surface* 2016; January 18th.

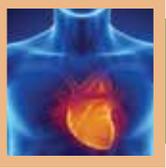
Yoon S, Bae S, Shin Y, et al: Low serum 25-hydroxyvitamin D levels are associated with dry eye syndrome. *PLoS One* 2016; January 25th.

## The Dental Diet

Dental patients recovering from scaling and root planing (SRP) are at low risk for periodontal disease if they eat right, according to a study from Brock University in Ontario, Canada. Patients (63 nonsmokers and 23 smokers) with chronic generalized periodontitis underwent SRP. Healing was evaluated based on periodontal disease assessed at baseline and eight- to 16 weeks after SRP. Intakes of fruits, vegetables, beta carotene, vitamin C, vitamin E, and the omega-3 fats ALA, DHA, and EPA were estimated. Blood vitamin D levels also were measured. Results

showed that, except for the omega-3 ALA and vitamin D, increased dietary intake of all the foods and nutrients measured was associated with reduced periodontal disease after SRP in non-smokers. The researchers conclude that these findings suggest, "...the development of dietary strategies to optimize healing after periodontal procedures."

Dodington D, Fritz P, Sullivan P, et al: Higher intakes of fruits and vegetables, beta-carotene, vitamin C, alpha tocopherol, EPA and DHA are positively associated with periodontal healing after nonsurgical periodontal therapy in nonsmokers but not in smokers. *The Journal of Nutrition* 2015;145: 2512-2519.



## Berries Good for Your Sex Life

Foods rich in flavonoids, such as berries, cherries, red wine, and citrus, might help men maintain healthy erections, according to a study from Harvard University's T.H. Chan School of Public Health in Boston. Diets of more than 25,000 men from the Professionals Follow-Up Study were analyzed for total flavonoid content during a four-year period. During 10 years of follow up, 35.6% of middle aged and older men reported erectile dysfunction (ED). The study showed that higher total fruit

intake, especially fruits rich in flavonoids, was associated with a 14% reduced risk for ED. Combining flavonoid-rich diets with exercise reduced the risk by 21%.

**IN PERSPECTIVE:** *Phytonutrient-rich fruits might reduced the risk for ED by helping improve blood vessel function and lowering blood pressure. Flavonoids include anthocyanins, flavanones, and flavones.*

*Cassidy A, Franz Z, Rimm E: Dietary flavonoid intake and incidence of erectile dysfunction. American Journal of Clinical Nutrition 2016; January 13th.*

### Some of the Best Flavonoid-rich Foods

Blackberries  
Blueberries  
Grapes  
Raspberries  
Strawberries

Plums  
Apricots  
Blood Orange Juice  
Grapefruit Juice  
Parsley

Kale  
Fresh Thyme  
Green and Black Teas  
Dark Chocolate  
Red Wine

## Carnitine and Autism Risk

Move over folic acid, there's a new nutrient on the prevent-birth-defects block. Researchers at Texas A & M Health Science Center College of Medicine investigated the link between carnitine and risk for autism. This compound is needed to transport fatty acids into the cells' energy powerhouses, the mitochondria. Previous studies showed that inherited mutations in a gene called TMLHE required for carnitine synthesis are linked with autism-spectrum disorders. Using technology allowing the researchers to mark, follow, and analyze individual neural stem cells in the developing brain, the researchers found that neural stem cells unable to produce carnitine did

not behave normally and were eliminated from the brain. But, when genetically at-risk neural stem cells were supplied with supplementary carnitine, they functioned normally. The researchers conclude that, "...inborn errors in carnitine production cause significant issues in a cell type [we] believe contributes to autism risk." The researchers also caution that, "even if this strategy works, it will not be a panacea for reducing all autism risk." But, it could be effective for those cases involving carnitine deficiency.

*Bankaitis V: Inborn errors of long-chain fatty acid beta-oxidation link neural stem cell self-renewal to autism. Cell Reports 2016; January 28th.*

## Omega-3s and Better Teenage Brains

Teenagers with the highest omega-3 levels also show improvement in brain function, according to a study from the Open University of the Netherlands. Blood levels of omega-3s were compared to cognitive ability in 266 typical adolescents between the ages of 13- and 15-years-old. Results showed that those teens with the

highest omega-3 levels showed higher information processing speed and less impulsivity compared to those with lower omega-3 levels.

*Van der Wurff I, von Schacky C, Berge K, et al: Association between blood omega-3 index and cognition in typically developing Dutch adolescents. Nutrients 2016; January 2nd.*

## IN THE NEWS

- The Centers for Disease Control and Prevention (CDC) warn pregnant women or women who could become pregnant to avoid 14 countries and territories exposed to the mosquito-borne Zika virus that is linked to birth defects. Those countries include: Brazil, Colombia, El Salvador, French Guiana, Guatemala, Haiti, Honduras, Martinique, Mexico, Panama, Paraguay, Suriname, Venezuela, and Puerto Rico.
- Weight loss programs that emphasize healthy fats, such as fish oils and olive oil, or low-fat/high-carbohydrate meal patterns produce about the same results for weight loss. Adding nuts, such as walnuts, also helps lower blood fat levels, at least for women, state researchers at the University of California, San Diego.
- Being overweight alters gene expression in the brain, especially in the memory center called the hippocampus, increasing the risk for cognitive decline as a person ages, state researchers at the University of Alabama in Birmingham.

## Natural Solution for Neuropathy?

Peripheral neuropathy results from damage to peripheral nerves in areas such as the hands or feet resulting in weakness, numbness, and pain. Chemotherapy often is the cause. Researchers at Memorial Sloan Kettering Cancer Center reviewed the research on alternative therapies, since there are no known solutions approved by the Food & Drug Administration (FDA). Results of the investigation showed that vitamin E helped prevent chemotherapy-induced peripheral neuropathy, while glutamine and the omega-3 fatty acids show promise. Electroacupuncture was no better than placebo and the benefits of supplementing with alpha-lipoic acid are unknown.

*Brami C, Bao T, Deng G: natural products and complementary therapies for chemotherapy-induced peripheral neuropathy. Critical Reviews in Oncology/Hematology 2016;98:325-334.*



## HOT TOPICS

- 1** Excess belly fat increases the risk for inflammation, heart disease, stroke, and diabetes even in people who are otherwise at a normal weight, according to a study from the Mayo Clinic in Rochester, New York. *Annals of Internal Medicine* 2015; November 10th.
- 2** Alcohol consumption is associated with an increased risk for skin cancer, according to a study from Brown University in Rhode Island. *American Journal of Clinical Nutrition* 2015;102:s1158-s1166.
- 3** Anthocyanins from aronia fruits (also called chokeberries) are nutrients also found in blueberries. In a study from Hokkaido University in Japan, these substances suppressed visceral fat accumulation and hyperglycemia in obese rats fed high-fat diets. *Journal of Oleo Science* 2015; November 19th.
- 4** When a food is described as “healthy,” people eat more and say they feel less full, regardless of the actual nutritional value of the food, according to a study from Cornell University. *The Journal of the Association for Consumer Research* 2015; December 28th.
- 5** Drinking sugary beverages, from sodas and energy drinks to bottled teas, leads to increased abdominal fat gain, a type of fat associated with diabetes and heart disease, state researchers at the National Institutes of Health. *Circulation* 2016; January 11th.
- 6** Supplementing with nitrate (NO<sub>3</sub>), or possibly ingesting nitrate-rich beet juice, enhances maximal muscle power in trained athletes, according to a study from the University of Utah. *International Journal of Sports Physiology and Performance* 2015; December 2nd.
- 7** Nine out of ten kids and 89% of adults consume far too much salt, increasing their risk for high blood pressure, heart disease, and stroke, state researchers at The Centers for Disease Control and Prevention in Atlanta. *Morbidity and Mortality Report* 2016; January 7th.
- 8** People eat more food when it is labeled “healthy,” undermining their efforts to cut calories and eat healthier, according to a study from the University of Texas. *Journal of the Association for Consumer Research* 2016; January 5th.
- 9** Being fit doesn't protect against disease if a person is still overweight, according to a study from Umea University in Sweden. *International Journal of Epidemiology* 2015; December 21st.
- 10** Researchers at the Imperial College London report that diets rich in saturated fatty foods (i.e., red meat, fatty dairy products, certain processed foods) are associated with a higher incidence of ovarian cancer. *American Journal of Clinical Nutrition* 2016;103:161-167.
- 11** If people worldwide were to cut back on saturated and trans fats and eat healthier fats, such as the omega-3s in seafood and the monounsaturated fats in olive oil, there could be more than a million fewer deaths from heart disease, state researchers at Tufts University in Boston. *Journal of the American Medical Association* 2016; January 20th.
- 12** Nine out of ten restaurants, whether they are fast-food, casual, or formal dining, American, Chinese, Greek, Indian, Italian, Japanese, Mexican or other, serve meals that exceed recommended calorie limits for a single meal and it is impossible to make an educated guess on the calories since many are hidden calories, state researchers at Tufts University in Boston. *Journal of the American Academy of Nutrition and Dietetics* 2016; January 20th.
- 13** A study from Cardiff University in Wales found that children who ate a healthy breakfast were up to two-times as likely to achieve at least average grades compared to those who skipped breakfast. *Public Health Nutrition* 2015; December 18th.
- 14** A diet high in saturated fat from meat, fatty dairy products, and processed foods, increases the risk for non-alcoholic fatty liver disease, state researchers at the Medical University of South Carolina. *Journal of Lipid Research* 2016;2015;56:2359.
- 15** A fiber-rich diet not only lowers the risk for diabetes, heart disease, and obesity, but a study from the University of Nebraska Medical Center reports that fiber-rich diet also might lower the risk for lung disease. *Annals of the American Thoracic Society* 2016; January 22nd.
- 16** Seat people at larger tables and serve them smaller portions and they eat less than if they are at a small table. According to researchers at Cornell University who conducted the study, the large table distracted the eaters and they presumed the smaller portions were more regular in size, resulting in reduced calorie consumption. *Journal of the Association for Consumer Research* 2016; January 19th.
- 17** The high amounts of added sugar in the American diet might increase the risk for breast cancer and metastasis to the lungs, state researchers at the University of Texas MD Anderson Cancer Center. *Cancer Research* 2016; January 4th.
- 18** Women who are obese prior to pregnancy are more likely than healthy weight women to give birth to infants with a high risk for death from preterm birth-related causes, state researchers at Boston University School of Public Health. *Obstetrics and Gynecology* 2016; January 22nd.
- 19** Supplementation with folic acid and vitamins B6 and B12 improved wound healing in diabetic mice, in a study from Nihon University Graduate School of Dentistry. *Journal of Clinical Biochemistry and Nutrition* 2016; 58:64-68.
- 20** Lycopene, the carotenoid found in watermelon and tomatoes, lowers the risk for premature death and cardiovascular disease in people with lupus erythematosus, according to a study at the University of Nebraska Medical Center in Omaha. *Journal of Dermatological Treatment* 2016; Jan 14: 1-6.
- 21** According to researchers at Aarhus University Hospital in Denmark, vitamin D levels are low in breastmilk and infants exclusively breast-fed receive less than 20% of the daily recommended dose, suggesting these infants should be supplemented. *American Journal of Clinical Nutrition* 2016; 103:107-114.



## New Healthy Fat Identified in Seafood

Herring is one of the many fatty fish known to contain hefty doses of the omega-3 fats, DHA and EPA. Researchers at Nofima Research Institute in Norway report that omega-3-rich herring also contain a fat, called cetoleic acid, that promotes health. In this study, human liver cells and salmon liver cells produced greater amounts of DHA and EPA when exposed to cetoleic acid. Salmon fed cetoleic acid-rich herring had higher levels of cetoleic acid and 10% higher levels of DHA and EPA in their tissues, compared to salmon fed sardine oil rich only in DHA and EPA. Lower incidence of fatty liver in farmed fish also was noted when herring oil was added to the feed. The researchers speculate that this implies that herring-fed fish (and possibly humans fed herring-rich diets) have a higher level of fat metabolism.

<http://nofima.no/en/nyhet/2016/01/herring-is-better-for-you-than-we-thought/>

Ross A, Svelander C, Undeland I, et al: Herring and beef meals lead to differences in plasma 2-aminoadipic acid, beta alanine, 4-hydroxyproline, cetoleic acid, and docosahexaenoic acid concentrations in overweight men. *Journal of Nutrition* 2015;145:2456-2463.

## NUTRITION ALERT

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## REVIEW

# Probiotics: Fact and Fiction

Probiotics are live bacteria that are good for your health, especially your digestive system. We usually think of bacteria as something that causes diseases. But your body is full of bacteria, both good and bad. Probiotics are the “good” or “helpful” bacteria because they have been known for years to help keep your gut healthy. Probiotics are naturally found in your body to varying degrees. You also can find them in some foods and supplements.

Your digestive tract, in particular the intestines, contains both probiotic and disease-causing bacteria. Encouraging the growth of probiotic bacteria is important in maintaining an effective intestinal barrier, enhancing nutrient absorption, and blocking toxins and pathogens. As a result, a main function of probiotics is to lower the risk for traveler's diarrhea and diarrhea caused by antibiotics, rotavirus, and impaired bowel function. Probiotics also help treat diverticulitis and encourage optimal immune function. They shorten or reduce the risk for infections (especially intestinal viruses and fungus infections), curb the severity of lactose intolerance symptoms, and reduce the risk for certain allergies. Probiotics also reduce the severity of gut inflammation, acute gastroenteritis, inflammatory bowel disease, irritable bowel syndrome, *Helicobacter pylori* infection, and colorectal cancer. Benefits are noted in all age groups, from infants to the elderly. Current research suggests probiotics also have a beneficial effect throughout the body. Maintaining a healthy gut environment appears to affect the circulatory, hormonal, immune, and even appetite systems, possibly lowering the risk for everything from heart disease, allergies, colds, and diabetes to food cravings and obesity.

How much do you need? A daily dose of  $10^9$  to  $10^{10}$  organisms, preferably a variety of strains rather than a single strain, appears to be most beneficial. A strain of bacteria is only considered a probiotic if it survives the acidic environment of the stomach to exert healthful benefits in the intestine. Strains found to be beneficial include *Lactobacillus acidophilus*, *Bifidobacterium*, and *L. rhamnosus*. It is believed that probiotics do not permanently adhere to the intestinal lining, but exert their benefits as they metabolize and move through the intestines. Thus, daily or frequent intake is required to maintain populations. What are the best sources?

**Yogurt:** Yogurt not only effectively supports the survival of “good bacteria” in the intestinal tract but may also improve the bacteria's capacity to provide health benefits. Choose plain yogurts that contain at least 5 different strains of probiotics

**Kefir:** This fermented milk drink is made with yeast and lactic acid bacteria cultures. Up to 12 stains are found in some kefir, some of which have long-lasting benefits in the gut.

**Sauerkraut:** Homemade or refrigerated sauerkraut or Kimchi contain probiotics, but bottled or canned varieties have been processed for safety, killing all probiotics.

**Tempeh and Miso:** These fermented soybeans are kept refrigerated, so main viable bacteria.

**Kombucha:** Bottled kombucha has been pasteurized for safety reasons, thus the healthy bacteria are destroyed. Unpasteurized kombucha is available, but there are reports of contaminated during processing.

*Advances in Nutrition* 2016;7:90-101/*Lancet Infectious Disease* 2016; January 12th/*Annals of Gastroenterology* 2016;29:24-32.

**HOT TOPIC:** Preliminary evidence gathered by researchers at Flinders University in South Australia suggests that patients taking medications for peripheral arterial

disease could be low in co-enzyme Q10, zinc, and vitamin B12 and should be monitored regularly for these nutrients. *Annals of Vascular Surgery* 2016; January 21st.