



## Dole Diet Center

### Turbocharge Your Food

Exercising Ups Nutrient Absorption from Berries, Tea



“Gut permeability,” “leaky colon,” “hot gut”—none of these terms conjure up conditions you’d think to put on your wish list. The colon carries digested food away from the stomach and towards the exit, so “leaking” would be the very last thing you’d want your colon to do, right? Well, it turns out the mechanics of metabolism are not quite as conventionally believed, and the colon might play a much greater role as the delivery vehicle of vital nutrition.

Scientists were investigating the efficacy of a protein drink infused with blueberry and green tea polyphenols as an alternative to taking NSAIDs (nonsteroidal anti-inflammatory drugs) to reduce inflammation and oxidative stress associated with extreme exercise. But the study led to unanticipated discoveries about how exercise amps up the absorption of nutrients via the colon versus other intestinal real estate.

During a two-week study, long-distance runners were given either an infused soy protein complex or just a protein complex. The runners ingested the soy protein complex twice a day, including the three days that they ran for two-and-a-half hours. Each dose of the infused complex included the equivalent of consuming three cups of blueberries and just over a cup of brewed green tea.

What resulted was the first evidence in a human clinical trial of enhanced polyphenolic absorption through the colon, rather than through the small intestine, following exercise. In addition, runners in the treatment group experienced increased fat oxidation 14 hours after exercise. The findings were published in *PLOS ONE* by David C. Nieman, Dr. P.H., FACSM, Director of the Appalachian State University Human Performance Laboratory in the College of Health Science; Mary Ann Lila, Ph.D., Director of the North Carolina State University Plants for Human Health Institute; and Nicholas Gillitt, Ph.D., Vice President, Dole Food Company, and Director of the Dole Nutrition Research Lab.

“Everybody thinks polyphenols get through by being absorbed in the small intestine, classic bioavailability if you like, but research shows hardly any polyphenols get through that way,” said Gillitt. “What we have observed is that they actually make it further down into the colon and get into the system that way. It is an alternative explanation to why these compounds might be in concentrations that could be beneficial to the body.” Dr. Gillitt added that the trials show that, “When you eat fruits and vegetables, these compounds can flood into the system, even if it is not by the classic way everyone thought they did.”

While the athletes in the experiment exercised at extreme levels—the kind of exertion that can actually compromise immunity and increase oxidative damage—the takeaway is relevant for the rest of us: “If you are willing to exercise hard enough to sweat, gut permeability increases, and you get more of these beneficial compounds coming back into your body,” observed Dr. Nieman.

What more delicious way to ingest these beneficial compounds than blueberries, which we celebrate during July which is National Blueberry Month. An excellent source of vitamin C, vitamin K, manganese and a good source of fiber—with just 80

### Hot News



NEW: POWERHOUSE  
TOP TEN LIST OF MOST  
NUTRITIOUS PRODUCE:

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### Featured Recipe



SIMPLE SAUTÉED  
SPINACH

calories a cup—blueberries, according to the USDA, ranked eighth out of over 100 common foods (per serving) in total polyphenol capacity. Tufts University has found that blueberries may slow, and even reverse, age-related brain decline in animal studies. The same scientists believe blueberries could someday protect astronauts against the radiation-induced free-radical damage experienced during extended space flight. Blueberries for dessert might offset the increase of free radicals and drop in antioxidant levels after an overindulgent meal.

**Blueberry bonus:** Like their little red cousin, the cranberry, blueberries contain compounds that may help ward off urinary tract infections. For a seasonal way to serve up these beneficial berries, try Dole's spectacular Summer Peach Blueberry Salad.

## Fat Genes? Fight Back

Saturated Fat Intake Influences Genetic Obesity Risk



Let's face it, life isn't fair. The conclusion becomes all the more unavoidable when we contemplate the genetic lottery. Whether on the superficial side—of who inherits the higher cheekbones or thicker eyelashes—or more serious side, of lives cut short by mortal disease, we're all dealt a genetic hand to play. But when it comes to genes affecting obesity, it turns out how we play our cards may afford us a little more control over our dietary destiny.

Tufts University researchers have explored how saturated fat intake impacts a person's genetic expression of obesity risk. A team of scientists led by Jose M. Ordovas, Ph.D, Director of the Nutrition and Genomics Laboratory at the USDA Human Nutrition Research Center on Aging (HNRCA) identified 63 obesity related gene variants, and employed them in predicting obesity risk scores for over 2,800 Caucasian adult study participants. The findings, published in the *Journal of the Academy of Nutrition and Dietetics*, showed that eating less saturated fat—from beef, pork, full-fat dairy such as cheese and butter, etc.—correlated with lower Body Mass Indices (BMIs) even among those with a genetic predisposition towards obesity. For those seeking to fight back against fat-favoring genes, limiting saturated fat intake would not only reduce overall calorie intake, but may help to level the genetic playing field.

Previous research has indicated that higher intakes of saturated fat may interfere with our ability to “feel full.” For example, one study found that palmitic acid, a saturated fat found in meat and full-fat dairy, as well as in the palm oil used extensively in shelf-stable junk foods, reduced the brain's normal response to satiety hormones. Higher saturated fat intake is linked to greater risk of heart disease, stroke, prostate and colorectal cancer. If reforming your diet seems like a tall order, start with more manageable steps, such as setting aside one day to consciously avoid the biggest source of saturated fat: meat. Going meatless on Monday—or the day of your choosing—may be enough to reduce your saturated fat intake by 15%.

## Let's Shake On It

Handshake Strength New Aging Indicator



Want to protect youthfulness? Start by firming up your handshake. The handshake is as ancient as the Egyptian pyramids (frescoes depicted it as early as 2800 B.C.). Across time, geography and culture, an extended hand has meant extended trust: A greeter couldn't simultaneously hold a weapon and clasp hands. Medieval knights gave the clasp a good shake (to dislodge hidden weapons) and thus the handshake has been, well, handed down in human relations.

Putting your best hand forward is crucial to projecting confidence—but more subtly it may also provide a reliable indicator of age, and not just chronological age, but biological age (i.e., how fast or how slow the body is aging, regardless of actual years lived). In a new study published in *PLOS ONE*, researchers from Sony Brook University detail findings correlating aging with other age markers, such as cognitive decline, future mortality, disability, etc. “Our goal is to measure how fast different groups in a society age,” said co-author Dr. Sergei Scherbov. “If some group is getting older faster than another, we can ask why that might be.” For example, while handgrip strength declined with age across all population groups, educational attainment preserved handgrip strength longer, giving a 65-year-old high school dropout and a 69-year-old with higher education an equivalent handgrip strength.

The good news is that peeling back the years by improving the strength, youthfulness and quality of your handshake is literally within your grasp. Don’t unintentionally “age” your handshake with a limp clasp. When reaching for another’s hand, open wide the space between your fingers to ensure 100% contact between the palms of your hands, and wrap around the other person’s hand. Put down any cold drinks that might give you a cold and clammy hand, and rise to shake if you’re seated.

Needless to say, fitness is key to a strong grasp—and diet is key to fitness. Lifting weights will ward off muscle loss—and gerontologists say it’s never too late to start lifting! Indeed, regular exercise can keep you genetically ten years younger! Beyond handgrip strength, mental acuity, aerobic capacity, and better muscle tone, working out might help rejuvenate your DNA. Getting adequate vitamin B6—supplied abundantly by bananas, red bell peppers, fish, walnuts and Russet potatoes—might help support DNA repair. Spinach, specifically, may have muscle-building benefits, according to basic research recently pioneered by Professor Mary Ann Lila, who is a David H. Murdock Distinguished Professor and the Director of the Plants for Human Health Institute at North Carolina State University. “Some may scoff at the notion that spinach, despite containing nutrients, builds muscles,” observed Dr. Lila, “But Popeye may have been on to something.” For a fresh way to enjoy spinach, try this Simple Sautéed Spinach from Dole Salads.

## Nutrition News Desk

### New: Powerhouse Top Ten List Of Most Nutritious Produce:

Watercress, Chinese Cabbage, Chard, Beet Greens, Spinach, Romaine Among Elite



Quick, name the “most” nutritious fruit and veggie you buy when you’re being especially health conscious. Maybe it’s kale, or blueberries, both of which have received plenty of press as top superfoods. But how do such foods fare when ranked by scientists with a consistent list of nutrient criteria? You may be surprised to learn that neither made the top ten!

In a study just published in the Centers for Disease Control journal *Preventing Chronic Disease*, researchers from William Paterson University in New Jersey zeroed in on seventeen critical nutrients—among them, fiber (cholesterol and weight control), potassium (blood pressure regulation), protein (building blocks of muscle), calcium (strong bones and teeth), folate (plays key role in preventing birth defects), vitamin B12 (brain health), vitamin A (vision, immune function), etc. The researchers, developing a categorization system using nutritional data from the U.S. Department of Agriculture, classified powerhouse fruits and vegetables that offered a minimum 10% of daily intake of these seventeen nutrients. They came up with a list of 41 nutritionally dense—or “powerhouse”—fruit and veggies.

They then ranked this list in order. What made the top ten?

**Watercress** captured the number one spot, with a perfect 100% score. Runners up in the top five tier: **Chinese cabbage** (91.99), **chard** (89.27), **beet greens** (87.08), and **spinach** (86.43). Next comes **chicory** (73.36), **green leaf lettuce** (70.73), **parsley** (65.59), **romaine** (63.48) and **collard greens** (62.49). And **kale**? It's there, and well positioned at #15 (with a 49.07 score), yet who would have thought it would trail **chives**, **endive** and **mustard greens**?

Well, this is all very interesting, particularly for nutrition buffs. But how accurate, relevant, and useful is it? On the positive side, if something inspires you to spend a little more time in the produce aisle, maybe try something you wouldn't have otherwise—like the list-topping watercress—then that's a good thing. After all, the oft-overlooked watercress certainly deserves its moment in the spotlight, not just for its nutrient density (which this study focused on) but for other potential benefits under study, including powerful protection against DNA damage.

The authors did not include phytochemicals in their criteria, citing the absence of proven data on benefits. Technically accurate—but we wonder whether the exclusion of antioxidants and phytochemicals may not be missing the nutrition forest for the trees, given the advancement of metabolomic research into the central role of such compounds.

All good food for thought and a reason to try some new recipes! This Oysters Rockefeller recipe includes three of the top ten foods—watercress, spinach and parsley. This beautiful Basic Green Soup draws on chard and spinach, along with slow-cooked onions and lemon juice for its complex flavor.

## Better Nutrition, Better Odds vs. Aids

Higher Nutrient Intake Improves Outcomes for HIV-Positive Patients in Sub-Saharan Africa



Since the beginning of the AIDS epidemic, nearly 75 million people have been infected and about 36 million people have died of HIV. Of the 35 million or so people living with HIV today, over 70% of them live in Sub-Saharan Africa, where nearly 1 in every 20 adults are infected. While the advent of antiretroviral therapy (ART) has done much to save lives, malnutrition remains pervasive among patients starting medical treatment, contributing to persistently high mortality rates in several African countries. This prompted

researchers to investigate how bolstering nutrition among the new HIV patients might boost survival odds.

The results are published in the scientific journal *BMJ*, recounting the findings of researchers from the University of Copenhagen and the Jimma University of Ethiopia to examine how nutritional supplementation in the first three months of ART might affect outcomes. The collaborative project provided 318 patients—66% female, with a median age of 33—with a peanut butter based supplement containing either soy or whey protein, and a variety of key nutrients, including zinc, selenium and copper. Compared to patients who received ART but no supplement, the study group gained three times as much weight—including more muscle weight. This, in addition to improved grip strength, enabled the patients to function more fully in work and family life. Most notably, prognosis improved by helping restore immune cells needed to suppress HIV.

The caloric density and high fat content (60%) of the supplement—originally developed for severely malnourished children—made it uniquely suited for short term use by adults undergoing ART in countries with challenged food supply, while longer-term

reliance could present metabolic complications. But the experiment provides insights for ART patients in developed countries with over-abundant food supplies as well.

A diet rich in fruit and vegetables, legumes and lean proteins can provide HIV-positive patients with the nutrients to repair damaged cells, strengthen immunity to better combat disease, manage symptoms and process medication. Fat content should be roughly half—30%—of that in the experimental supplement, and fats should derive from healthy sources like olive oil, nuts, avocado, seeds and fish. And everyone, regardless of any underlying chronic health challenges, can reinforce immunity by eating a wide variety of produce, especially top sources of nutrients such as vitamin A (sweet potatoes, carrots, kale), vitamin C (pineapple, broccoli, kiwi), vitamin E (sunflower seeds, almonds), selenium (Brazil nuts, oysters) and zinc (crab, clams).

**Immunity bonus:** Take time for tea—Harvard researchers found tea drinkers had significantly higher antiviral interferon in their bloodstream.

## Chew, Don't Bite

Cutting Their Food Helps Kids Behave Better



It's summer grilling time, when kids can dispense with utensils while chowing down chicken drumsticks and corn on the cob. But one unintended consequence of this more relaxed dining etiquette may be rowdier behavior, new research suggests.

In a study published in *Eating Behaviors*, a team led by Brian Wansink, Professor and Director of the Cornell University Food and Brand Lab, observed elementary children at summer camp to see if eating habits had any effect on kids' conduct. On day one, half the kids were served chicken drumsticks—the other half were served chicken cut into bite-sized pieces. On day two, the servings were swapped. The results: Kids who'd bitten into their food were twice as likely to act out (talk back, climb on picnic table, act aggressively) as those who'd eaten food that was cut up. Says Wansink: "If you want a nice, quiet, relaxing meal with your kids, cut up their food. If drumsticks, apples or corn on the cob are on the menu, duck!"

Why might this be? We know that mindful eating techniques—using chopsticks, ditching dinky forks, chewing (and thus fully tasting) and turning off the TV at mealtime—can support weight loss among adults by giving them time to feel more full and make more considered dietary choices. The Cornell research suggests the mindfulness benefits may extend beyond the dinner table—supporting a more measured approach in other areas of life as well.

In addition to having your kids use utensils, where else do kids' diet and deportment intersect?

**Caffeine intake:** Among kids ages 8 to 12, caffeine intake is nearly 30% higher than recommended. Even 5- to 7-year-olds consumed, on average, 16% more caffeine than recommended for that age group. Swap soda and energy drinks with better beverage options such as 100% fruit juice, which is linked to lower body mass indices and higher nutrient intakes among children under age 12, according to the American Academy of Pediatrics.

**Candy:** Not only does too much sugar increase your child's risk of tooth decay and obesity—research published in the *British Journal of Psychiatry* suggests that tots who have candy on a daily basis are far more likely to later face trouble with the law due to violent behavior. Better options: Raisins and other dried fruit—nature's candy—provide needed nutrients and fiber.

**Obesity:** Obese children face up to a 63% increased risk of peer harassment according to a study published in *Pediatrics*. The more sensitive children are, the more likely to be obese, acutely amplifying the emotional impact of bullying. More fruit and vegetables in the diet help kids feel fuller, protecting them against excess weight gain, and promoting self-esteem.

## Featured Recipe

### Simple Sautéed Spinach

#### Ingredients

- 2 tablespoons extra-virgin olive oil
- 4 cloves garlic, thinly sliced
- 20 cups DOLE® Spinach from three 8-ounce packages
- 1 tablespoon lemon juice
- 1/4 teaspoon salt
- 1/4 teaspoon crushed red pepper



**Serves:** 6

**Cook Time:** 20 min.

#### Directions

Heat oil in a Dutch oven over medium heat. Add garlic and cook until beginning to brown, 1 to 2 minutes. Add spinach and toss to coat. Cover and cook until wilted, 3 to 5 minutes. Remove from the heat and add lemon juice, salt and crushed red pepper. Toss to coat and serve immediately.

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