CONTENTS

PURPLE FRUITS AND VEGETABLE
LEMON-CRANBERRY MUFFINS
BARLEY PILAF
GREEN BEANS WITH PARMESAN
EXERCISE
MEDICAL ERRORS
UNMANNED AERIAL VEHICLES (UAVs) AND GLOBAL HEALTH
COLORED FRUITS AND VEGETABLES

Eating a variety of colorful produce will give a lot of different phytonutrients. There are thousands of these compounds in plants. Red, blue, and purple pigments give foods like blueberries, grapes, cranberries, cherries, red cabbage, and eggplant their deep colors. Purple color indicates anthocyanins in fruits and vegetables. Like other phytonutrients, our body needs them to help protect our cells from damage that can lead to illness and disease. Anthocyanins may boost the brainpower and mood, help the brain cells communicate with each other, may help lower the blood pressure, keep blood vessels healthy and soft, and help with joint problems like osteoarthritis and gout.

Plums are purple with more of those anthocyanins. Riper fruits will also have more usable nutrients. The peel could have as much as 20 times the antioxidants as the flesh inside. Cherries are bursting with nutrients that together may help prevent cancer, heart disease, and diabetes. Blueberries, blackberries, strawberries, bilberries, black currants, and mulberries all have similar properties. Potatoes with purple skin and flesh contain anthocyanins, and 2-3 times the total antioxidants of a typical white potato, which is loaded with potassium, magnesium, vitamin C, and fiber.

The anthocyanins of grapes can run from red to black. These juicy gems are known for having resveratrol, which has gotten a lot of attention for being part of a group of nutrients that work together to help protect your cells from damage that can lead to disease. The skins of grapes give red wine its color -- and its resveratrol. Purple cauliflower contains anthocyanins in addition to the usual phytonutrients, vitamin C, and minerals found in regular cauliflower.

Purple Carrots have extra anthocyanins as well as the beta carotene and other carotenoids found in orange carrots that may help stop cancer and improve the immune system. Carrots, sweet potatoes, pumpkins, spinach and kale
contain beta carotene which is useful to make vitamin A, which helps keep the immune system and vision working well. Red cabbage also contains anthocyanins and cooking helps easier for the body to use and fermenting cabbage to make sauerkraut or kimchi, which contains natural probiotics that nourish the bacteria in the gut microbiome that helps the body fight germs, absorb nutrients, digest food, and even control anxiety. Beets’ color comes from different antioxidants called betalains instead. You’ll also find these red and yellow pigments in the stems of chard and rhubarb, as well as some mushrooms and fungi. They break down more easily when you cook them than anthocyanins do, so try steaming rather than roasting. Beets will add sweetness and a beautiful purplish-red color to your smoothies. These veggies are good for your heart, brain, and blood sugar.

Flaxseeds, sesame seeds, whole grains, beans, and berries, contain lignans which are converted into compounds that behave like estrogen, which may block the natural hormone. Resveratrol compound is in grapes, berries, and peanuts, and has shown promise as a possible cancer fighter and brain booster. Common in Indian and Asian dishes, turmeric protects against type 2 diabetes, cuts inflammation, and fights depression. Quercetin is well-studied flavonoid present in apples, onions, berries, and grapes. Flavonoids help keep bones, cartilage, blood, fat, and small blood vessels healthy. Quercetin might ease asthma symptoms, lower cholesterol levels, and fight cancer. Sulforaphane is in cruciferous vegetables like broccoli, Brussels sprouts, cabbage, cauliflower, and kale. This powerful antioxidant is also responsible for that rotten smell. It may help lower the chance of getting certain cancers like breast cancer.
Lycopene pigment gives the red color to tomatoes, watermelon, and pink grapefruit. Scientists are excited about lycopene’s potential to help fight cancer, particularly prostate cancer. Soybeans, peas, kidney beans, lentils, and nuts have plant sterols. Soy products like tofu and edamame are the richest sources of phytoestrogens called isoflavones that can lower your LDL. Cayenne and other spicy peppers contain capsaicin. Capsaicin creams are used to relieve pain from arthritis, fibromyalgia, and some types of nerve damage as well as psoriasis itching. It’s also being studied as a way to fight cancer, help with weight loss, and treat heartburn.

Ellagic acid is in raspberries, strawberries, pomegranates, and walnuts. Lutein and Zeaxanthin protect eyes and vision by absorbing harmful light waves, and lower risk of age-related macular degeneration, the leading cause of blindness in older adults. Dark, leafy greens with healthy fats help the body absorb these nutrients.

Allicin is an antioxidant found in garlic helps reduce inflammation, improve blood pressure and cholesterol levels, and fight germs. Catechins are phytonutrients found in tea, cocoa, grapes, apples, and berries help fight cancer and protect against heart disease.

LEMON-CRANBERRY MUFFINS

**Ingredients:** 1/2 cup plus 2 tablespoons sugar, divided; 3/4 cup nonfat plain yogurt; 1/3 cup canola oil; 3 teaspoons freshly grated lemon zest, divided; 2 tablespoons lemon juice; 1 teaspoon vanilla extract; 1 1/2 cups white whole-wheat flour; 1/2 cup cornmeal, preferably medium or fine stone-ground; 2 teaspoons baking powder; 1 teaspoon baking soda; 1/4 teaspoon salt; 1 1/2 cups cranberries fresh or frozen (thawed), coarsely chopped; and 1 1/2 tsp dry Egg Replacer or a banana.

**Instructions:** Preheat oven to 400°F. Coat 12 (1/2-cup) muffin cups with cooking spray or line with paper liners. Whisk 1/2 cup sugar, yogurt, oil, banana/egg-replacer, 2 teaspoons lemon zest, lemon juice and vanilla in a medium bowl. Whisk flour, cornmeal, baking powder, baking soda and salt in a large bowl. Add the yogurt mixture and blend. Mix cranberries. Divide the batter among the muffin cups. Combine the remaining 2 tablespoons sugar and remaining 1 teaspoon lemon zest in a small bowl. Sprinkle evenly over the tops of the muffins. Bake the muffins until golden brown and they spring back lightly to the touch, 20 to 25 minutes. Let cool in the pan for 10 minutes, then transfer to a wire rack to cool for at least 5 minutes before serving.

BARLEY PILAF

**Ingredients:** 1 tbsp. olive oil; 1 cup chopped onion; 1 cup sun-dried tomatoes cut into strips; 4 cups baby spinach; 1/4 cup slivered almonds; 2 cups cooked barley; and 2 tbsp. parsley.
Directions: Heat oil in large frying pan. Sauté onions until translucent and add tomatoes, spinach, and almonds. Stir in barley. When spinach is wilted and barley is hot, sprinkle with parsley. Serve immediately.

GREEN BEANS WITH PARMESAN

**Ingredients**: 1 pound green beans, trimmed; 1/4 teaspoon salt; 1/4 teaspoon ground pepper; 3 tablespoons butter; 2 cloves garlic, minced; 1/2 cup fresh whole-wheat breadcrumbs; 3 tablespoons grated Parmesan cheese.

**Instructions**: Bring 1 inch of water to a boil in a large saucepan fitted with a steamer basket. Add green beans, cover and steam until tender-crisp, 5 to 7 minutes. Transfer to a large bowl and season with salt and pepper. Meanwhile, heat butter in a large skillet over medium heat. Cook, swirling often, until starting to brown, 3 to 4 minutes. Add garlic and cook, stirring, until the butter is nutty brown, about 30 seconds more. Stir in breadcrumbs and cook, stirring, until crispy, 3 to 4 minutes. Toss the breadcrumbs with the green beans. Top with cheese.

EXERCISE

Breathing, circulating blood and basic brain functions require energy, constantly burning calories, even when the body is at rest doing nothing. This is resting metabolism and it is higher in people with more muscle. Every pound of muscle uses about 6 calories a day just to sustain itself, while each pound of fat burns only 2 calories daily. Any activity that increases the rate of heart beat and breathing such as brisk walking, cycling, swimming, etc. boosts blood flow to all parts of the body. Swimming builds endurance, strength, and flexibility, increases blood flow, reduces stress, burns calories, and develops strong, flexible core. A frog pose is an intense hip opener that stretches inner thighs, groin, and hips to release stress. A hinge pose helps to hold the body in a position. Lean back at a 45-degree angle for a few seconds before returning upright and repeat. Kegels strengthen pelvic floor muscles. A plank is a way to strengthen the deepest layer of abdominal muscles (transversus abdominis), along with upper arms, thighs, and buttocks. Cat/Cow yoga pose limbers the spine, evens breathing rhythm, and improves focus, moving with a steady flow, so that each rounding up (the cow part) takes a full breath out and each arching downward (the cat part) takes a full breath in. Pelvic thrust works on glutes, calves, and hamstrings to
build stamina and flexibility, and sculpt the buttocks. Couples who sweat together stay together by coordinating actions to strengthen emotional connection.

After a session of strength training, muscles are activated all over the body, raising the average daily metabolic rate. Aerobic exercise may not build big muscles, but it can rev up the metabolism after a workout. High-intensity exercise delivers a bigger, longer rise in resting metabolic rate than low- or moderate-intensity workouts. A program including short bursts of jogging during a regular walk may yield these benefits, as well.

Dehydration slows down the metabolism. A glass of water or other unsweetened beverage before every meal and snack, and eating fresh fruits and vegetables, should give enough water to prevent dehydration. Caffeine can increase endurance and raise metabolic rate. Drinking green tea or oolong tea offers the combined benefits of caffeine and catechins, substances shown to rev up the metabolism for a couple of hours. Eating less overall, while having small meals with spicy foods keeps burning more calories over the course of a day at a higher rate. Spicy foods have natural chemicals that can raise metabolism.

SALMONELLOSIS

Consumption of food contaminated with Salmonella can cause salmonellosis, one of the most common bacterial foodborne illnesses. The most common symptoms of salmonellosis are diarrhea, abdominal cramps, and fever within 12 to 72 hours after eating the contaminated product. The illness usually lasts 4 to 7 days. Most people recover without treatment. In some persons, however, the diarrhea may be so severe that the patient needs to be hospitalized. Older adults, infants, and persons with weakened immune systems are more likely to develop a severe illness. Individuals concerned about an illness should contact their health care provider. Recently, the US Department of Agriculture’s Food Safety and Inspection Service (FSIS) has issued a public health alert due to concerns about illnesses that may be caused by Salmonella associated with a chicken salad product in the state of Iowa.
MEDICAL ERRORS

Medical error is the nation’s third leading cause of death, behind only cancer and heart disease, and is estimated to cause more than 250,000 deaths each year, according to researchers at Johns Hopkins\(^3\), and in 2013, 611,105 people died of heart disease, 584,881 died of cancer and 149,205 died of chronic respiratory disease, according to the CDC. Most errors represent systemic problems including a lack of training, human error, and poor communication.

An 8-year-old died after receiving methadone instead of methylphenidate for ADHD. A 19-year-old man showed signs of potentially fatal complications after he was given clozapine instead of olanzapine to treat schizophrenia. A 50-year-old woman was hospitalized after taking Flomax instead of Volmax to relieve bronchospasm. In each of these cases reported to the Food and Drug Administration, the names of the dispensed drugs looked or sounded like those that were prescribed. Serzone (antidepressant) for Seroquel (schizophrenia), iodine for Lodine (non-steroidal anti-inflammatory drug). About 10 percent of all medication errors reported resulting from drug name confusion, according to the FDA\(^4\).

The FDA says that selection must take into account concerns for reducing errors and for avoiding trademark infringement. The FDA requires that either the established or official name, the common or usual name, appears on labels and labeling of a drug product. The common name, loosely referred to as the generic name, must accompany the brand name, if there is one. The established name for a drug substance is usually found in the originating country’s pharmacopeia, an official book or list of drugs and medicines and the standards established for their production, dispensation, and use.

The generic name is usually created for drug substances when a new drug is ready for marketing. It is selected by the United States Adopted Names (USAN) Council, whose expertise is recognized by the FDA, according to principles developed to ensure safety, consistency, and logic. These names are typically used by health care professionals. Generic names are coined using an established stem, or group of letters, that represents a specific drug class. For example, the USAN stems include suffixes like -mab for monoclonal antibodies, such as infliximab, prefixes like dopa- for dopamine receptor agonists, suffixes like -coxib stem for the arthritis medications like celecoxib, valdecoxib, and rofecoxib, each belongs to a class of drugs known as the COX-2 inhibitors.

Examples of numerous drug names that have been confused because they look and/or sound similar include Celebrex\(^\circledast\) (celecoxib), Cerebyx\(^\circledast\) (fosphenotoin), and Celexa\(^\circledast\) (citalopram). Factors such as poor handwriting and clinical similarity may exacerbate the problem. To minimize confusion between drug names that look or sound alike, the FDA reviews about 400 brand names a year before they are marketed. About one-third are rejected. The last time the FDA changed a drug name after it was approved was in 2005, when the diabetes drug Amaryl was being confused with the Alzheimer's medication Reminyl, and one person died. Now the Alzheimer's medicine is called Razadyne. The USP and the USAN changed the drug name "amrinone" to "inamrinone" after receiving reports of serious outcomes from
medication errors involving the similar name pair "amrinone/amiodarone."" FDA said it had received 50 reports of medication errors involving Brintellix, an antidepressant, and Brilinta, a blood thinner, as of June 2015.

UNMANNED AERIAL VEHICLES (UAVs) AND GLOBAL HEALTH

Unmanned Aerial Vehicles (UAVs) or drones are defined as aircraft operated without the possibility of direct human intervention from within or on the aircraft (Public Law 112-95, Section 331(8))\(^5\). Unmanned Aircraft System (UAS)\(^6\) are complex systems include UAVs, ground stations, and other elements besides the UAVs. The military has been using UAVs since WWI, with an increase in the recent years closely followed along with a dramatic increase in commercial interest in these vehicles having potential to serve a wide range of government, scientific, and commercial applications including border and port security, homeland surveillance, scientific data collection, cross-country transport, telecommunications services, and recreational use. To realize the potential of UAVs, the Federal Aviation Administration (FAA) has established requirements and process for operating UAVs\(^7\). The FAA and the Association for Unmanned Vehicle Systems International (AUWSI) will co-host the 3rd Annual FAA Unmanned Aircraft Systems (UAS) Symposium\(^8\) to bring together representatives from the FAA and other government agencies, industry and academia to discuss the latest issues related to the burgeoning use of unmanned aircraft and their integration into the National Airspace System. The USAID’s Center for Accelerating Innovation and Impact (CII) has invested in numerous pilot projects to test the efficacy of UAVs and realize the great potential of UAVs in global health, providing an investment roadmap\(^9\). Sky is the limit for innovation!

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1. 10 Ways to Boost Your Metabolism: https://www.webmd.com/diet/ss/slideshow-boost-your-metabolism

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Innovative Financing to Achieve Impact in Global Health


3 Study Suggests Medical Errors Now Third Leading Cause of Death in the US, May 3, 2016; https://www.fda.gov/Drugs/ResourcesForYou/Consumers/ucm143553.htm


6 Unmanned Aircraft Systems https://www.faa.gov/uey/

7 Requirements and Process for Becoming a Pilot https://www.faa.gov/uey/getting_started/part_107/remote_pilot_cert/

8 the 3rd Annual FAA Unmanned Aircraft Systems (UAS) Symposium on March 6-8, 2018 at the Baltimore Convention Center, Baltimore, MD https://www.faa.gov/news/releases/?newsid=89667
