

## Slow Down the Aging Process

Richard Collins, MD  
Susan Buckley, RD

## Is There A Fountain Of Youth?

- o No such thing as “anti-aging
- o Aging is inevitable
- o CAN *accelerate* or *decelerate* aging
- o What you eat can have a powerful effect on how you age
- o Along with exercise, avoiding toxins, reducing stress and getting quality sleep

## Healthy Aging

- o Aging is a lifelong process
- o Aging successfully doesn't mean you have to reach a magic number – 90, 100 or beyond
- o Aging successfully is **keeping your health and maintaining functions** such as taking care of yourself, being able to drive and living on your own

## Healthy Aging

- o According to the Centers for Disease Control and Prevention, in 1907 only 3 million people in America were over the age of 65
- o As the first baby boomers turn 65 in 2011, that number will increase to over *70 million*
- o According to US Census Bureau, in 2050 about 834,000 Americans will be at least 100 years old!

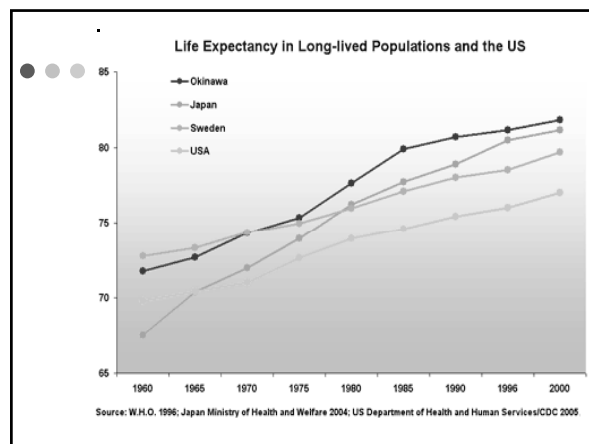


## Healthy Aging

- o Genes play a role in how long you'll live as well
- o But may not be as large a role as you think!
- o Swedish study on twins who were raised in same household vs different household
- o Longevity differences are about 35% genetic and 65% environmental!

## ● ● ● Healthy Aging

- Some of the most compelling findings on diet and aging come from research of long-lived people around the world
- Eating habits of 2 cultures – the European countries that border the Mediterranean Sea and the Okinawans of Japan offer lessons on how to dine well and live longer



## ● ● ● Healthy Aging

- More people in Okinawa reach 100 than anywhere else on earth
- Okinawans average life expectancy – 81 (highest on earth)
- Typical menus in both Okinawa and the Mediterranean include lots of fruits, vegetables, and legumes
- Limited dairy and red meat
- Healthy fats



## ● ● ● Healthy Aging

- Some foods and beverages contain powerful substances called phytonutrients that some researchers believe are capable of unlocking the key to longevity
- Phytonutrients are members of the antioxidant family
- Antioxidants gobble up free radicals
- Free radicals are oxygen molecules that play a role in onset of heart disease, cancer, Alzheimer's, etc

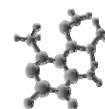
## ● ● ● Healthy Aging

- Many longevity experts agree that free radicals are the main culprit involved in damaging our bodies as we age



## ● ● ● Free Radicals

- Free radicals are oxygen molecules with one or more unpaired electrons
- Some have an extra electron or more than one extra electron without a partner
- Some are missing one or more electrons



## Free Radicals

- Oxygen molecules zip around in the body trying to steal an electron from, or donate an electron to, another molecule to satisfy or neutralize its charge
- Once it does that – the other molecule becomes a free radical in turn
- Cascade of free radicals . . .
- Free radicals highly reactive – damage from this process called *oxidation* or *oxidative stress*
- Cause tremendous damage to the body

## Free Radicals



- Free radicals damage DNA
- Experts say DNA in each cell in body can take a damaging hit from free radicals 104 times a day!
- Oxidize cholesterol – cause plaque
- Damage structure and function of tissues
- Cause everything from wrinkles to heart disease

## Free Radicals

- Fortunately – body has built-in system for neutralizing free radicals so they cause less damage
- Apple
- Think of cells throughout body like apple slices



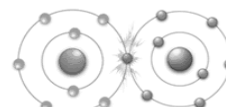
## Antioxidants

- Free radical damage – oxidation
- Antioxidants – “against oxidation”
- Antioxidants circulate in body and break chain reactions of free radicals robbing or donating electrons to or from other molecules

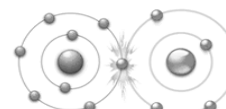


## Antioxidants

- Antioxidants offer up their own electrons to the roving bands of free radicals
- When dietary antioxidants give up electrons – they don't become free radicals themselves – they remain harmless



Free radical steals an electron from another molecule.





Antioxidant stabilizes the molecule by giving an electron.

## ● ● ● Antioxidants

- Body needs antioxidants ALL DAY LONG
- Important to take in antioxidants continually
- Antioxidants: Vitamins A, C, E, and minerals that support body's antioxidant enzymes
- Plant chemicals phytochemicals
- Important that they come from FOODS!

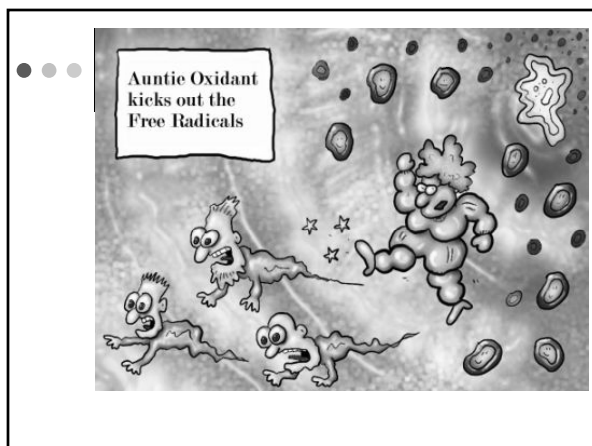
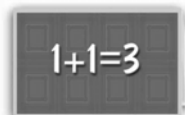
## ● ● ● Antioxidants

- Supplements are **supplemental** to the diet
- Haven't identified everything in fruits and vegetables
- Hundreds of compounds in fruits/vegetables/whole grains
- Classic example: Large Finnish study male smokers who took beta-carotene supplements (vitamin A precursor) actually increased their risk for lung cancer

<p><b>BROCCOLI</b></p> <p>alanine alpha-carotene alpha-tocopherol anthocyanin arginine ascorbic acid aspartic acid beta-carotene calcium cellulose</p> <p>chlorophyll a chlorophyll b copper coumarins cryptoxanthin cystine flavonoids folate fructose glucose</p> <p>glutamic acid glycine histidine indoles iron isoleucine isothiocyanates leucine lignin linoleic acid</p> <p>linolenic acid lutein lycopene lysine magnesium manganese methionine monoterpenes niacin oleic acid</p> <p>palmitic acid pantothenic acid phenolic acid phenylalanine phosphorus potassium proline raffinose riboflavin s-methyl-l-cysteine</p> <p>selenium serine sodium starchyose stearic acid sucrose sulfides sulfoxide thiamin threonine</p> <p>tri-terpenes tryptophan tyrosine valine water xanthophylls zeaxanthin zinc</p>			
			
<p><b>BLACK PEPPER</b></p> <p>beta-caryophyllene cadinene calcium dietary fiber dihydrocarveol iron lauric acid linoleic acid</p> <p>linolenic acid magnesium myristic acid niacin oleic acid palmitic acid phosphorus piperidine</p> <p>piperonal potassium phytosterols riboflavin sodium thiamin water zinc</p>			

## ● ● ● Antioxidants

- Inexplicable synergy of Mother Nature's antioxidants that are naturally found in food
- Sum is larger than their individual parts



## ● ● ● Add Up Your Antioxidants

- Fruits and Vegetables have an ORAC score
- ORAC – Oxygen radical absorbency capacity
- Indicates a food's ability to neutralize cell-damaging free radicals in a test tube or lab measurement
- Not definitive on how this translates to role of antioxidant-rich foods in our diet
- Preliminary research indicates may act same way in our bodies

## ORACs



- o Federal government estimates Americans consume 4,000 to 5,000 ORAC units per day
- o Equal to 2 ½ servings of fruits/vegetables
- o Research estimates people need 12,000 to 13,000 daily ORAC units to effectively squelch free radicals!

## ORAC Studies

- o Antioxidant power of blood raised 25% after consuming 1 ½ cups strawberries, 1 ¾ cup cooked spinach
- o 2 glasses red wine daily - 30% increase in total plasma antioxidant capacity
- o Cardiac study – 6 oz pomegranate juice each day for 1 year – 130% increase in total antioxidant status as well as decrease in blood pressure
- o 4 cups black tea for 4 weeks – increased antioxidants by 33%

## ORACS

- o Beans, small red dry ¼ cup 9,378
- o Blueberry, wild ½ cup 6,314
- o Red wine 6 oz 4,585
- o Prunes ¼ cup 3,646
- o Artichoke hearts, ½ cup 3,592
- o Cloves ½ tsp 3,144
- o Green tea 1 cup 2,951
- o Turmeric ½ tsp 1,593

## Okinawa study

- o 7 servings of fruits/vegetables each day
- o 7 servings grains – rice, wheat noodles
- o 2 servings of soy
- o Fish several times per week
- o Minimal meat and dairy foods
- o Practice – 80% full
- o Eating mindfully, daily ritual

## Calorie Restriction

- o Studies also starting to show that just cutting back on calories may reduce number of free radicals that your body churns out and help you live longer
- o Body produces free radicals *as part of the digestion process*
- o In nature, smaller animals live longer
- o Weight loss lessens inflammatory markers - CRP

## Calorie Restriction

- o As we age, calorie needs drop
- o As we age body loses lean body mass (muscle) – metabolism lowers
- o Easier to gain weight – extra weight increases chances of developing heart disease, diabetes, high blood pressure, etc
- o Imperative to pack diet with nutrient dense foods: vegetables, fruits, whole grains
- o Limit less-healthy treats “empty calories”

## Inflammation



- o Another factor of aging is chronic inflammation
- o The “Evil Twins” of aging: oxidative stress and chronic inflammation
- o Food can be either pro-inflammatory or anti-inflammatory

## Inflammation

- o When inflammation is an on-going process in the body, it can lead to disease
- o Many illnesses – including heart disease, many cancers and Alzheimer’s disease – are influenced in large part by chronic inflammation
- o Immune system becomes off balance and persists unnecessarily in its efforts to repair the body and repel pathogens

## Inflammation

- o Prolonged inflammatory process results in damage to healthy tissue
- o Stress, lack of exercise, genetic predisposition and other lifestyle factors can all promote inflammation
- o Poor diet is the main contributor



## Anti-inflammatory food guide pyramid

- o [www.drweil.com](http://www.drweil.com)
- o Healthy sweets – sparingly: dried fruit, dark chocolate, fruit sorbet
- o Red wine: optional no more than 1-2 glasses per day (1 for women, 2 for men)
- o Supplements: daily multivitamins
- o Tea: 2-4 glasses/day
- o Healthy herbs and spices: unlimited

## Anti-inflammatory food guide pyramid

- o Other Protein: 1-2 servings/**week** animal protein
- o Cooked Asian Mushrooms: Unlimited
- o Whole soy foods: 1-2 servings per day
- o Fish and Seafood: 2-6 servings per week
- o Healthy Fats: 5-7 servings per day
- o Whole grains: 3-5 servings per day
- o Pasta: 2-3 servings per week

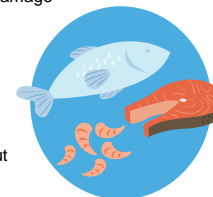
## Anti-inflammatory food guide pyramid

- Beans and legumes: 1-2 servings per day
- Vegetables: 4-5 servings per day
- Fruits: 2-4 servings per day
- Water: throughout day
- SERVING of vegetable is ½ cup cooked or 1 cup raw or 6 oz vegetable juice
- SERVING of fruit: 1 medium piece or 1 cup (berries, grapes, etc.) or 6 oz juice or 2 tablespoons dried fruit



## Omega-3-Fats

- Maintain cell membranes so they are effective barriers – allow water and nutrients in and keeping toxins out
- Protect skin against sun damage
- Anti-inflammatory!
- Oily fish
- Sardines
- Flaxseed
- Walnuts
- Seniors who eat fish at least once a week may cut Alzheimer's risk in 1/2



## Balance of Omega 6 to Omega 3

- Body requires both – both are polyunsaturated fats
- Must be provided by the diet
- Both are related to inflammation
- Diet that minimizes inflammation will help reduce aging changes in our skin
- Should be consumed in a ratio of 4:1 Omega 6 to Omega 3 to control inflammation

## Omega 6

- Pro-inflammatory in high amounts
- Plentiful in diet
- Especially in processed foods
- Corn oil, safflower oil, sunflower oil, cottonseed oil peanut oil
- Salad dressings, bread, crackers, cookies, etc
- Need to decrease intake. Currently ratio of Omega 6 to Omega 3 is about 20:1
- Should be ratio of 4:1

## Fish Oil Supplements

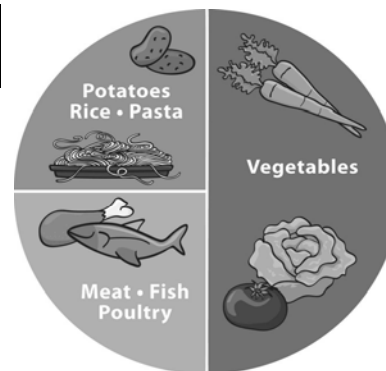
- Two omega-3 fatty acids – eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA) found to help lower triglycerides, reduce blood clotting and decrease inflammation
- AHA: healthy people should get about 1 gram per day of EPA and DHA
- High triglycerides: 2-4 grams per day (under care of health care provider)
- Fish oil supplements – quality matters
- Omacor/Lovaza – prescription fish oils

## Menu for Staying Young

- Choose foods that are anti-inflammatory and rich in antioxidants
- Focus on plants: fruits and vegetables contain a wide range of healthy antioxidants and anti-inflammatory compounds
- Studies: people who eat diets high in fruits/vegetables – lower risk of heart disease, high blood pressure, cancer, diabetes, plus better memory and eyesight

## Vegetables/Fruits

- Aim for a variety of colorful produce
- Fill at least 1/2 of your plate with vegetables and fruits
- Choose a rainbow of colors: dark leafy greens (kale/spinach), deep yellow and orange (sweet potatoes, yellow bell peppers), red (tomatoes, strawberries) and blue and purple (grapes and blueberries)
- Enjoy at least 5-8 servings per day



## Vegetables/Fruits

- **What does 8 servings a day look like?**
- Breakfast: 6 oz. low-sodium V-8 and an orange
- Lunch: 2 cups salad and an apple
- Snack: 1 cup baby carrots/cherry tomatoes
- Dinner: 1 cup broccoli



## Choose the Right Fats

- Eating some fat is important for health
- Essential fatty acids
- Fat-soluble vitamins A, D, E, & K
- Reduce saturated fats found in animal foods
- Steer clear of trans fats (found in margarine and processed foods)

## Choose the Right Fats

- Get omega-3 fats in foods like fatty fish (salmon, trout, sardines, herring, tuna), flaxseed, and walnuts
- Fats that are good for the heart as well as the brain
- Fats in fish can help reduce risk of dementia and Alzheimer's disease
- Both Okinawan and Mediterranean diets contain high levels of omega-3s
- Aim for 2-3 servings of oily fish per week

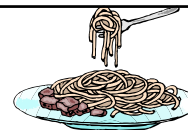
## Choose the Right Fats

- 1200 calories – 40 grams total fat
- 1500 calories – 50 grams total fat
- 2000 calories – 67 grams total fat
- Ratio of 1:2:1
- Saturated: monounsaturated: polyunsaturated
- Reduce saturated (animal fats) by eating less butter, cream, cheese, full-fat dairy

### ● ● ● Choose the Right Fats

- Use EVOO or almond or walnut oil to make salad dressings
- For neutral flavor use expeller-pressed, organic canola oil
- Avoid most margarine, vegetable shortening, all partially hydrogenated
- Include nuts, avocado, nut butters, salmon, sardines, herring, trout

### ● ● ● Hold the Sugar



- Baked goods and white bread, white pasta, crackers and sugary drinks score high on the glycemic index (GI)
- Body quickly digests high-GI foods and converts them to sugar – triggers insulin release – upping risk of diabetes and other age-related conditions
- Sugars cause chemical reactions in body that promotes inflammation

### ● ● ● Hold the Sugar



- Advanced glycation end products or AGEs
- AGE – created when blood sugar – glucose – becomes attached to proteins
- Becomes glycated
- Changes structure and function of protein
- Causes proteins to cross-link with each other
- Contributes to wrinkles, brown spots

### ● ● ● Hold the Sugar



- AGEs linked to cataracts
- Damage cartilage in joints
- Osteoarthritis
- Arteries stiffen – heart disease
- Cause cells in immune system to release chemicals that initiate inflammation

### ● ● ● Choose the Right Carbs

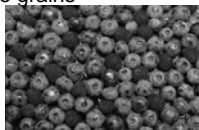
- 1200 calories – 120 grams carbs
- 1500 calories – 150 grams carbs
- 2000 calories – 200 grams carbs
- Majority from whole grains (not whole wheat flour products) like brown rice, quinoa, barley, oats, corn, beans, winter squash and sweet potatoes
- Reduce bread, chips, pretzels, crackers
- Cook pasta al dente and eat in moderation
- Avoid products made with HFCS

### ● ● ● Choose the Right Protein

- 1200 calories – 60 to 80 grams/day
- 1500 calories – 75 to 100 grams/day
- 2000 calories – 80 to 120 grams/day
- Less if you have liver or kidney problems or autoimmune disease
- Decrease animal protein, except fish and reduced-fat dairy products
- Eat more vegetable protein – beans, soy beans

## ● ● ● Choose the Right Fiber

- 35 to 40 grams per day
- Eat fruit – especially berries – vegetables, beans/legumes and whole grains
- Blueberries improved recall & coordination in Tufts animal research
- Whole-grain cereals with at least 5 grams fiber per serving



## ● ● ● The Right Phytonutrients

- To get maximum natural protection against age-related diseases eat a variety of fruits and vegetables
- Choose from all part of the color spectrum: berries, tomatoes, orange and yellow fruit, dark leafy greens
- Choose organic whenever possible
- Environmental Working Group: “the dirty dozen”

## ● ● ● The Right Phytonutrients

- Eat cruciferous – cabbage family – vegetables regularly: cabbage, broccoli, cauliflower, Brussels sprouts
- Include soy foods in diet
- Drink tea – especially green and white
- If you drink alcohol, use red wine preferentially
- Enjoy plain dark chocolate in moderation: 70% cocoa content

## ● ● ● The Right Supplements

- If you are not eating oily fish at least twice a week: 1-2 grams fish oil (EPA + DHA)
- MV/M for your age/sex
- Vitamin C: 500 mg per day
- Vitamin E: 400 IU mixed tocopherols
- Calcium citrate – women 1200-1500 mg per day (depending on diet) and men no more than 1200 mg from all sources (divided doses)

## ● ● ● The Right Supplements

- Vitamin D3 – get levels checked. 1,000-5,000 IU per day
- CoQ 10 – 60-200 mg per day. Powerful antioxidant.
- If you are not regularly eating ginger and turmeric consider taking in supplemental form
- Turmeric may reduce incidence of Alzheimer’s disease. Protects against brain oxidation



## ● ● ● Sleep

- Skin cells divide during the night, replenishing collagen and repairing the day’s damage
- Sleep regulates hormones that suppress appetite and metabolize fat
- Research Columbia University: 6 hours or less a night – 23% more likely to be obese than people who slept 7-9 hours
- 5 hours or less – 50% more likely
- 4 hours or less – 73% more likely



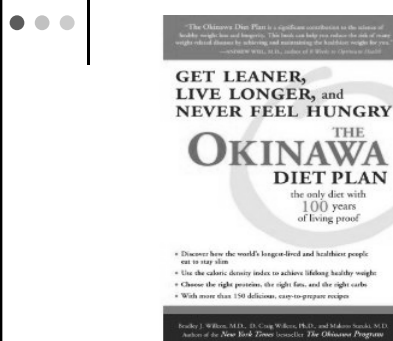
## The Mediterranean Diet

- Not a diet but a lifestyle
- Never breakfast without fruit
- No meal without vegetables
- Walk to buy fresh, whole foods
- Colorful foods, anti-oxidants
- Complex carbohydrates, whole grains, beans, legumes, nuts
- Animal protein, less than 13 oz/week
- Fish 4.5-15 oz per week



## Okinawa Diet

- Not a diet but a lifestyle
- Food from the sea – fish, sea vegetables, seaweed
- 7 servings of fruits/vegetables each day
- 7 servings grains – rice, wheat noodles
- 2 servings of soy
- Minimal meat and dairy foods
- Practice – 80% full
- Eating mindfully, daily ritual



## Real Age Test

- Are you biologically younger, older, or the same age as your calendar age? Take the free **RealAge Test**.
- Predicts a person's true biological age
- Based on 136 factors including diet, fitness, routine, social life and stress, etc.
- Take the test at [realage.com](http://realage.com)

## Real Age

- | Activity                             | Years Reduced        |
|--------------------------------------|----------------------|
| ○ Walk 30 min                        | 1.6                  |
| ○ Eat 1 oz nuts                      | 3.3 men<br>4.4 women |
| ○ Drink 8 oz tomato juice            | 1                    |
| ○ Take an aspirin                    | 2.2                  |
| ○ Eat an oz of cocoa based chocolate | 1.2                  |

## Aging Healthfully

- Aging can add richness to life
- Aging brings wisdom, depth of character, focus on what is truly important in life
- To age gracefully . . . Let nature take its course while doing everything in your power to delay onset of age-related disease
- We want to adapt to changes that time brings and to arrive at old age with minimal deficits and discomforts

••• |

Let's Get  
Cooking!

A black and white illustration of a hand mixer with a bowl of batter. The mixer is positioned centrally below the text. The bowl is filled with a textured substance, likely batter, and the mixer's beaters are visible. The entire scene is enclosed in a rectangular frame.