

Energy Recharge Coaching: Carbohydrates

With
Dr. Ritamarie Loscalzo

Medical Disclaimer: The information in this presentation is not intended to replace a one-on-one relationship with a qualified health care professional and is not intended as medical advice. It is intended as a sharing of knowledge and information from the research and experience of Dr. Ritamarie Loscalzo, drritamarie.com, and the experts who have contributed. We encourage you to make your own health care decisions based upon your research and in partnership with a qualified health care professional.

What You'll Learn:

- What carbohydrates are
- Introduction to the carb family members
- Food sources of carbohydrates
- Refined vs whole carbs
- How to know which carbs work best for you
- Therapeutic diets related to carbs
- What's best for you – low, medium, or high carb intake

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What Are Carbohydrates?

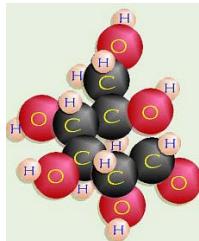
- Large molecules consisting of carbon (C), hydrogen (H), and oxygen (O) atoms, usually with a hydrogen to oxygen ratio of 2:1 $C_m(H_2O)_n$, i.e., glucose is $C_6H_{12}O_6$
- Hydrates of carbon-H₂O plus C
- Also known as saccharides:
 - Monosaccharides (1 sugar)
 - Disaccharides (2 sugars)
 - Oligosaccharides (3-9 sugars)
 - Polysaccharides (many sugars)

GLUCOSE MOLECULE

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Function Of Carbohydrates

- ★ Energy
- ★ Fiber for intestinal function
- ★ Spare protein for use as energy
- ★ Transport of proteins



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Carbohydrates in Foods

Simple Carbs

- ★ Sugar
- ★ Candy
- ★ White flour anything – crackers, cookies, pizza crust
- ★ White rice
- ★ Flour products



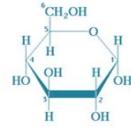
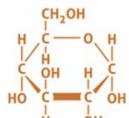
Complex carbs

- ★ Legumes
- ★ Whole grains
- ★ Nuts and seeds
- ★ Vegetables
- ★ Fruit
- ★ Tuber and root vegetables

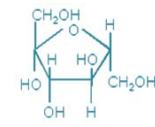
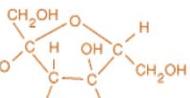
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Monosaccharides

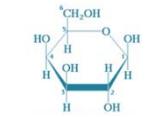
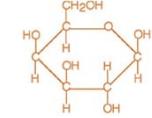
Glucose



Fructose

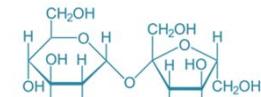


Galactose

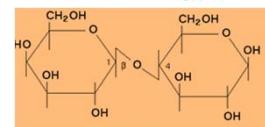


Disaccharides

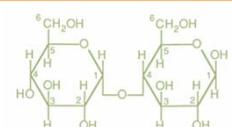
Sucrose



Lactose



Maltose



Oligosaccharides

Fructooligosaccharides

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Fructooligosaccharides (FOS)

Food Sources:

- ✓ Jerusalem artichoke
- ✓ Yacon
- ✓ Blue agave
- ✓ Bananas
- ✓ Onions
- ✓ Chicory root
- ✓ Garlic
- ✓ Asparagus
- ✓ Jícama
- ✓ Tomatoes
- ✓ Leeks

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Polysaccharides

starch

glycogen

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Cellulose

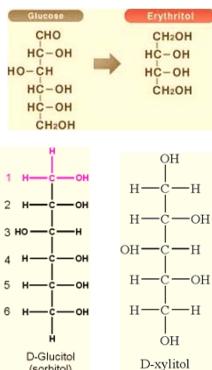
cellulose

**There can be several hundred to over 10,000 glucose molecules bonded together

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Sugar Alcohols

- Also known as polyols
- Do not contain ethanol
- Sweetness similar to sucrose
- Fewer calories than sugar
- Naturally occurring and chemically derived
- Do not raise blood sugar



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Sugar Alcohols Compared

Name	Sweetness relative to sucrose	Energy (kcal/g)	Sweetness per food energy, relative to sucrose
Erythritol (4 carbon)	0.812	0.213	15
Mannitol (6 carbon)	0.5	1.6	1.2
Sorbitol (6 carbon)	0.6	2.6	0.92
Xylitol (5 carbon)	1.0	2.4	1.6
Compare with: Sucrose	1.0	4.0	1.0

* Erythritol is by far the best choice, sorbitol the worst

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Erythritol

- Most absorbed in the small intestine and excreted unchanged in the urine
- About 10% enters the colon - does not normally cause laxative effects
- Free of side effects in regular use
- Doses over 50 grams (1.8 oz) can cause nausea and stomach rumbling
- More difficult for intestinal bacteria to digest than other sugar alcohols, so it's less likely to cause gas or bloating
- Naturally occurring in pears, melons, grapes, mushrooms, wine, soy sauce, and cheese



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How Does Cooking Affect Carbohydrates?

- ★ Conversion of starch to sugar
- ★ Increases glycemic index
- ★ Increases available calories
- ★ Decreases resistant starch content
- ★ High heat creates acrylamide, a known carcinogen



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The Top 20 Foods By Average Acrylamide Intake In US

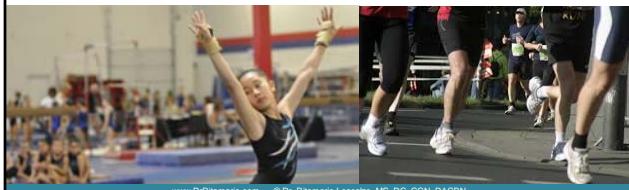
- French fries (made in restaurants)
- French fries (oven baked)
- Potato chips
- Breakfast cereals
- Cookies
- Brewed coffee
- Toast
- Pies and cakes
- Crackers
- Soft bread
- Chile con carne
- Corn snacks
- Popcorn
- Pretzels
- Pizza
- Burrito / tostada
- Peanut butter
- Breaded chicken
- Bagels
- Soup mix



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When Are Higher Carbs Needed?

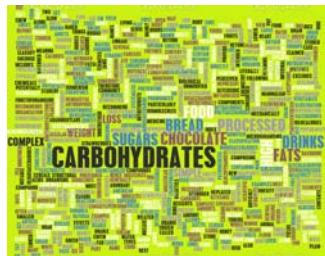
- Need to gain weight
- Competitive athletics
- High caloric need
- Growing children
- Pregnancy unless insulin resistant



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Types of Carbs

- Grains – whole vs processed
- Legumes
- Fruits
- Vegetables
- Fiber – soluble vs insoluble
- Sugar
- Sugar alcohols



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Assessment of Carbohydrate Status and Tolerances

- ✓ Fasting blood glucose
- ✓ Home testing - post meal and exercise blood glucose
- ✓ Hemoglobin A1C
- ✓ Fructosamine
- ✓ Insulin



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Nutrition Facts
 Serving Size: About (20g)
 Servings Per Container: 16

	Amount Per Serving	% Daily Value*
Total Calories	60	
Calories From Fat	15	
Total Fat	2 g	3%
Saturated Fat	1 g	4%
Trans Fat	0 g	
Cholesterol	0 mg	0%
Sodium	45 mg	2%
Total Carbohydrates	15 g	5%
Dietary Fiber	4 g	17%
Sugars	4 g	
Sugar Alcohols (Polylols)	3 g	
Protein	2 g	
Vitamin A	0%	
Vitamin C	0%	
Calcium	2%	
Iron	2%	

*Percent Daily Values are based on a 2,000 calorie diet.

Ingredients: Wheat flour, unsweetened chocolate, erythritol, inulin, oat flour, cocoa powder, evaporated cane juice, whey protein concentrate, corn starch (low glycemic), natural flavors, salt, baking soda, wheat gluten, guar gum

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Carbohydrates in Foods

★ See 3 PDF documents included on website

NDB_No	Description	Weight(g)	Measure	Carbohydrate (g) or (g/100g)	Sugars, total(g)
51374	Potato, russet, flesh and skin, baked	289.0	1.0 potato (each) (7.7 oz)	64.31	4.9
51847	Sweet potato, canned, syrup pack, drained weight	194.0	1.0 cup	49.71	5.9
51378	Potato, mashed, dehydrated, flakes without salt, dry form	46.0	1.0 cup	48.70	4.0
51215	Garlic, raw	136.0	1.0 cup	44.96	2.9
51039	Lima beans, immature seeds, beans, boiled, separated	364.0	1.0 cup	41.23	9.8
51176	Corn, sweet, yellow, canned, vacuum pack, regular pack	230.0	1.0 cup	40.82	4.2
51196	Cottage (cheese), immature seeds, whole, cooked, boiled, drained, without salt	178.0	1.0 cup	40.39	10.9
51202	Corn, sweet, yellow, canned, whole, cooked, boiled, drained, without salt	175.0	1.0 cup	40.39	4.0
51179	Corn, sweet, yellow, canned, home pack, regular pack, whole and liquids	256.0	1.0 cup	35.48	4.4
51240	Lima beans, immature seeds, beans, boiled, cooked, drained, without salt	130.0	1.0 cup	31.01	10.8
51383	Potato, mashed, dehydrated, prepared from potatoes with milk, water and no preservative added	210.0	1.0 cup	31.87	2.7
51192	Cottage (cheese), immature seeds, cooked, boiled, drained, without salt	187.0	1.0 cup	31.33	8.2
51314	Potato, mashed, whole, dry form	120.0	1.0 cup	32.59	—
51178	Corn, sweet, yellow, dried, beans, beans, corn off cob, boiled, drained, without salt	141.0	1.0 cup	31.84	4.0
51037	Lima beans, immature seeds, beans, boiled, separated	160.0	1.0 cup	31.79	8.8
51048	Dried, peas, immature seeds, beans, separated	94.0	0.1111 package (35 oz)	30.35	5.4
51381	Potato, mashed, dehydrated, prepared from potatoes without milk, whole milk and butter added	210.0	1.0 cup	30.80	4.8
51276	Mashed corn, beans, cooked, steamed, without salt	145.0	1.0 cup, cubes	29.00	—
51436	Soybeans, green, raw	216.0	1.0 cup	31.29	10.8

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Carbohydrate Intolerance and Special Diets

- ★ Lactose intolerance
- ★ Low glycemic
- ★ Gluten free
- ★ Specific carbohydrate diet (GAPS): monosaccharides only are allowed
- ★ FODMAPs: Fermentable Oligosaccharides, Disaccharides, Monosaccharides And Polyols

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