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## Macronutrients: Carbohydrate Clinical Applications

**Dr. Ritamarie Loscalzo**

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**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.



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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
- ✓ Chile con carne
- ✓ Corn snacks
- ✓ Popcorn
- ✓ Pretzels
- ✓ Pizza
- ✓ Crackers
- ✓ Soft bread
- ✓ Coffee\*
- ✓ Burrito / tostada
- ✓ Peanut butter
- ✓ Breaded chicken
- ✓ Bagels
- ✓ Soup mix



\*<http://drbenkim.com/articles/acrylamide-food.htm>  
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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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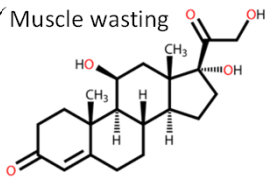
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### Potential Impact of Too Low Carbohydrate Intake

- ✓ Increases cortisol
- ✓ Decreases testosterone
- ✓ Decreases T3
- ✓ Low Energy
- ✓ Muscle wasting



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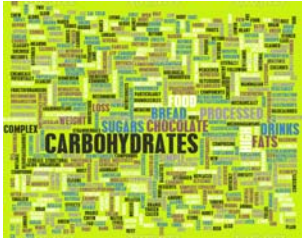
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### Types of Carbs

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



A word cloud with 'CARBOHYDRATES' in the center. Other words include: BREAD, PROCESS, SUGARS, CHOCOLATE, PRINKS, FATS, COMPLEX, VEGET, LESS, and BREAD.

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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



A close-up photo of a hand using a blue glucometer to test a drop of blood from a finger.

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### Nutrition Facts

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

	Amount Per Serving	% Daily Value*
<b>Total Calories</b>	60	
Calories From Fat	15	
<b>Total Fat</b>	2 g	3%
Saturated Fat	1 g	4%
Trans Fat	0 g	
<b>Cholesterol</b>	0 mg	0%
<b>Sodium</b>	45 mg	2%
<b>Total Carbohydrates</b>	15 g	5%
Dietary Fiber	4 g	17%
Sugars	4 g	
Sugar Alcohols (Polyols)	3 g	
<b>Protein</b>	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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INE: Macronutrients - Carbohydrate  
Clinical Applications



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Carbohydrates in Foods					
✓ See 3 PDF documents included on website					
NDB_No	Description	Weight(g)	Monomers	% monomers, by difference(g) Per Monomer	Weight, monom(g) Per Monomer
11136	Potatoes, Russet, flesh and skin, baked	200.0	1.0 protein large (2" to 3.5" dia)	66.11	6.9
11147	Lower potatoes, russet, cornmeal, baked, without salt	190.0	1.0 mg	46.75	5.9
11178	Potatoes, russet, dehydrated, flakes without salt, dry form	85.0	1.0 mg	46.79	4.9
11213	Caulis, raw	150.0	1.0 mg	44.96	2.9
11048	Lentils, mature seeds, brown, baby, unprepared	100.0	1.0 mg	42.25	9.9
11179	Corn, sweet, yellow, canned, vacuum pack, regular pack	210.0	1.0 mg	40.02	4.2
11196	Cornmeal (blenders), mature seeds, brown, cooked, baked, without salt	170.0	1.0 mg	40.39	10.9
11052	Lentils, mature seeds, cooked, baked, without salt	170.0	1.0 mg	40.19	9.9
11176	Corn, sweet, yellow, canned, vacuum pack, regular pack, whole and liquid	210.0	1.0 mg	39.48	4.4
11040	Lentils, mature seeds, brown, baby, cooked, baked, without salt	180.0	1.0 mg	37.03	10.8
11183	Potatoes, russet, dehydrated, prepared from granules with salt, water and vegetable oil	210.0	1.0 mg	37.87	2.7
11197	Cornmeal (blenders), mature seeds, cooked, baked, without salt	147.0	1.0 mg	37.33	8.2
11114	Peanut butter, spreadable, oil	120.0	1.0 mg	32.33	—
11175	Corn, sweet, yellow, brown, kernels cut off cobs, baked, without salt	147.0	1.0 mg	31.54	4.9
11017	Lentils, mature seeds, brown, dehydrated, unprepared	100.0	1.0 mg	31.75	8.8
11048	Beans, pinto, mature seeds, brown, unprepared	94.0	0.100 package (10 oz)	30.71	7.4
11181	Potatoes, russet, dehydrated, prepared from granules without salt, whole milk and vegetable oil	210.0	1.0 mg	30.18	4.8
11279	Mommsen peas, brown, cooked, steamed, without salt	147.0	1.0 mg, other	29.08	—
11470	Soybeans, green, raw	210.0	1.0 mg	28.29	10.8

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Daily Food Log Example						
NAME	AMOUNT	UNIT	CAL'S	FAT(g)	CARBS(g)PROTEIN(g)	
Seeds, chia seeds, dried	1	oz	130	8.7	11.9	4.7
Nuts, coconut cream, raw (liquid expressed from grated meat)	1	oz	94	9.8	1.9	1.0
Broccoli, cooked	1	lb	225	9.8	31.5	10.4
Kale, raw	4	cup, chopped	131	2.5	23.4	11.5
Avocado, raw	1	cup, sliced	234	21.4	12.5	2.9
Lettuce, arugula, raw	4	cup	20	0.5	2.9	2.1
Cauliflower, cooked	2	cup	143	8.7	14.3	6.3
Cucumber, raw	1	cup, sliced	14	0.2	2.6	0.7
Cabbage, green, cooked	2	cup	120	5.9	16.5	3.8
Oil, flavored, contains added sliced flaxseed	1	tablespoon	120	13.6	0.1	0.1
Celery, raw	3	medium stalk (7-1)	19	0.2	3.6	0.8
Peppers, sweet, yellow, raw	1	pepper, large (3-1)	50	0.4	11.8	1.9
Lettuce, raw	4	cup, shredded or	31	0.3	6.5	2.0
Tomatoes, raw	1	cup	32	0.4	7.0	1.6
Nuts, cashew nuts, raw	2	oz	314	24.9	17.1	10.3
Totals			1684	107.3	163.6	60.0

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### Carbohydrate Intolerance and Special Diets

- ✓ Lactose intolerance
- ✓ Low glycemic
- ✓ Gluten and grain free
- ✓ Specific Carbohydrate Diet (SCD) and GAPS - monosaccharides only are allowed
- ✓ FODMAPs: Fermentable Oligosaccharides, Disaccharides, Monosaccharides And Polyols



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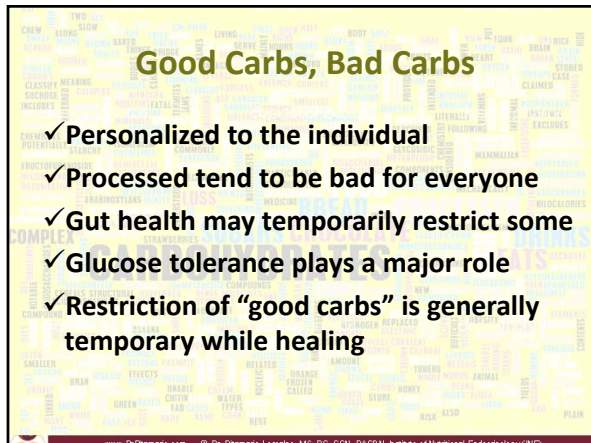
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### Good Carbs, Bad Carbs

- ✓ Personalized to the individual
- ✓ Processed tend to be bad for everyone
- ✓ Gut health may temporarily restrict some
- ✓ Glucose tolerance plays a major role
- ✓ Restriction of “good carbs” is generally temporary while healing



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