Making Sense of Macronutrients: Part One - Carbohydrates

Kristin Cuculovski, MS, RDN, CSO, LD/N
Oncology Nutrition Coordinator
Macronutrients

- **Macronutrients** = nutritive components of food that the body needs for energy and to maintain the body’s structure and systems

- **Carbohydrates**, fat and protein are all called macronutrients

- No healthy diet should **exclude or seriously restrict** any macronutrient
Focus on foods rich in fiber, vitamins, and phytonutrients to protect against cancer.

- Modest 3-ounce serving of meat (fish, poultry, or red meat)
- Variety of foods
- Two kinds of vegetables
- Healthy serving of a tasty whole grain
The Plate Method

- Simple tool to make meal planning easier!
- Helps balance your nutrients
- Divide your plate into sections
  - ½ non-starchy vegetables
  - ¼ lean protein
  - ¼ grains & starches

½ Non-Starchy Vegetables + ¼ Grains & Starches + ¼ Lean Protein = 1 Great Plate
Carbohydrates (aka Carbs)

- Primary energy source – your body turns carbs into glucose (blood sugar) to give you energy to function

- Three types of carbohydrates:
  - Fiber
  - Starches
  - Sugars

- On the Nutrition Facts Food Label “Total Carbohydrates” includes a combination of all three types
## Carbohydrate Containing Foods

<table>
<thead>
<tr>
<th>Fiber</th>
<th>Starch</th>
<th>Sugar</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Beans</td>
<td>• Beans</td>
<td>• Naturally occurring in milk and fresh fruits</td>
</tr>
<tr>
<td>• Legumes</td>
<td>• Legumes</td>
<td>• Added sugars – sweets, canned fruit, juice, soda, candy bars, ice cream, etc.</td>
</tr>
<tr>
<td>• Fruits</td>
<td>• Fruits</td>
<td></td>
</tr>
<tr>
<td>• Nuts/Seeds</td>
<td>• Whole Grains</td>
<td></td>
</tr>
<tr>
<td>• Whole Grains</td>
<td>• Vegetables</td>
<td></td>
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<tr>
<td>• Vegetables</td>
<td></td>
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</tr>
</tbody>
</table>
When you eat carbohydrates your digestive system breaks down the food into glucose or blood sugar.

Your bloodstream absorbs the glucose and your cells use it as energy to fuel your body.

The amount and types of carbs you eat affects your blood sugar.

Consuming a lot of carbs can raise your blood sugar levels and not consuming enough can cause low blood sugar.
Blood Sugar & Insulin

- When your blood sugar is elevated your body produces insulin.

- Insulin is a hormone made by your pancreas – jobs include:
  - Helps sugar enter into a cell to be used as energy.
  - Takes extra sugar to your liver to be stored for later (fat cells).

- Storing excess sugar as fat leads to overweight and obesity which increases risk of cancer, diabetes, and heart disease.
Simple vs. Complex Carbohydrates

**Simple carbs** are digested quickly and more likely to cause a spike in your blood sugar

- Can increase your weight and risk for diabetes, heart disease and high cholesterol

**Complex carbs** are less likely to cause a spike in your blood sugar due to the time it takes to digest

- They also contain vitamins, minerals, and fiber that your body needs
Complex Carbs: Fiber & Starches
Fiber

- Dietary fiber is found mainly in fruits, vegetables, whole grains and legumes

- Benefits of Fiber:
  - Normalizes bowel movements
  - Helps maintain bowel health
  - Lowers cholesterol levels
  - Helps control blood sugar levels
  - Aids in achieving a healthy weight

- Fiber Recommendations
  - Male = 30-38 gm/day
  - Female = 21-25 gm/day
Types of Fiber – Soluble Fiber

**Soluble Fiber:**
- Dissolves in water to form a gel-like material
- Can help **lower** blood cholesterol & glucose levels
- Found in:
  - Oats
  - Peas
  - Beans
  - Apples
  - Citrus Fruits
  - Carrots
  - Barley
  - Psyllium
  - Chia Seeds
Types of Fiber – Insoluble Fiber

**Insoluble Fiber:**

- Promotes the movement of material through your digestive system & increases stool bulk
- Those who struggle with constipation or irregular stools can benefit from this type of fiber

**Found in:**
- Whole-wheat flour
- Wheat Bran
- Nuts
- Beans
- Vegetables
Starches

- Starches are complex carbohydrates
- They also provide vitamins and minerals
- Found in:
  - Beans and Legumes (black beans, lentils, chick peas)
  - Fruits (berries, apples, melons)
  - Whole Grain Products (brown rice, oatmeal)
  - Vegetables (corn, lima beans, peas, potatoes)
- Benefits of starches:
  - Helps control blood sugar levels (complex carb)
  - Aids in achieving a healthy weight – fullness lasts longer between meals
Simple Carbs: Sugar
Sugars

- Sugars are a simple carbohydrate
- Our body breaks down simple carbs quickly and causes blood sugars to rise and then drop quickly
- You may feel a burst of energy – followed by feeling tired/sluggish
- Two types of sugars:
  - Naturally occurring sugars – found in milk and fresh fruits
  - Added sugars – found in sweets, canned fruit, juice, sodas, etc.
- All sugars are processed the same – the body cannot tell the difference between natural or added sugars
- However – foods with natural sugars also provide vitamins, minerals and some fiber
Added Sugar

- Sugar goes by many names – check the food label ingredients:
  - Agave nectar
  - Cane syrup or corn syrup
  - Dextrose, fructose or sucrose
  - Honey
  - Molasses
  - Sugar

- Limiting “added sugar” is essential to keep blood sugar levels in the healthy range

- The American Heart Association recommends:
  - No more than 25gm per day of added sugar for women
  - No more than 36gm per day of added sugar for men
Added Sugar

- Be cautious with added sugars – they are simple sugars that we add to our foods
  - Adding sugar to your coffee or tea
  - Added by food manufacturers to processed and prepared foods
- 75% of packaged foods have added sugars
- The average American eats 22 teaspoons (88gm) per day of added sugars which adds up to 130 pounds of added sugar per year!
What to do?

- Focus on healthy, complex carbohydrates that are in fruits, vegetables, whole grains, and legumes (beans) which are foods that appear to fight cancer best.

- Avoid “naked carbohydrates” or only eating carbohydrates by themselves.

- When eating carbohydrate foods always pair them with a source of protein and/or fat for a balanced meal = more balanced blood sugars.

- Example: instead of having 2 pieces of fruit for a snack, have 1 piece of fruit and a small handful of nuts (healthy fat, protein, and fiber).

- Join us next month for part two of this series on protein and fat.
**Building Your Meal**

- **Fiber** = 5-15 grams/meal
- **Protein** = 20-30 grams/meal
- **Fat** = 10-20 grams/meal

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<table>
<thead>
<tr>
<th>Grains &amp; Starchy Vegetables</th>
<th>Fruit</th>
<th>Dairy</th>
<th>Non-Starchy Vegetables</th>
<th>Protein</th>
<th>Healthy Fats</th>
<th>Snacks</th>
</tr>
</thead>
<tbody>
<tr>
<td>One serving is ¼ to 1 cup:</td>
<td>One serving is 1 small piece of whole fruit or ½ cup:</td>
<td>One serving is ½ cup cooked or 1 cup raw:</td>
<td>One serving is 3-4 oz. or 2 oz. of meat or seafood:</td>
<td>One serving is 1 cup:</td>
<td>Check label for serving size:</td>
<td>Less than 5 grams of carbs:</td>
</tr>
<tr>
<td>Grains: Whole wheat flour</td>
<td>Apple</td>
<td>Milk/Yogurt</td>
<td>Asparagus</td>
<td>Beef</td>
<td>Monounsaturated Fats:</td>
<td>15 almonds</td>
</tr>
<tr>
<td>Whole oats/oatmeal</td>
<td>Apricots</td>
<td>Fat-free milk</td>
<td>Artichoke</td>
<td>Chicken</td>
<td>- 3 celery sticks &amp; 1 tbsp of peanut butter</td>
<td></td>
</tr>
<tr>
<td>Popcorn</td>
<td>Banana</td>
<td>Low-fat milk</td>
<td>Beans (green/wax)</td>
<td>Fish</td>
<td>- 5 baby carrots</td>
<td></td>
</tr>
<tr>
<td>Brown rice</td>
<td>Blackberries</td>
<td>Plain non-fat yogurt</td>
<td>Brussels sprouts</td>
<td>Ham</td>
<td>- 5 cherry tomatoes &amp; 1 tbsp. of ranch dressing</td>
<td></td>
</tr>
<tr>
<td>Whole rye</td>
<td>Blueberries</td>
<td>Non-fat light yogurt</td>
<td>Broccoli</td>
<td>Lamb</td>
<td>- 1 hard-boiled egg</td>
<td></td>
</tr>
<tr>
<td>Whole grain barley</td>
<td>Cherries</td>
<td>Soy milk</td>
<td>Cabbage</td>
<td>Pork</td>
<td>¼ cup of fresh blueberries</td>
<td></td>
</tr>
<tr>
<td>Whole farro</td>
<td>Fruit cocktail</td>
<td>Rice milk</td>
<td>Carrots</td>
<td>Seafood</td>
<td>1 cup light popcorn</td>
<td></td>
</tr>
<tr>
<td>Wild rice</td>
<td>Grapes</td>
<td>Almond milk</td>
<td>Cauliflower</td>
<td>Meat substitutes</td>
<td>2 saltine crackers</td>
<td></td>
</tr>
<tr>
<td>Buckwheat</td>
<td>Kiwi</td>
<td>Cheeses</td>
<td>Celery</td>
<td>(check label for serving size):</td>
<td>½ cup sugar-free jelly</td>
<td></td>
</tr>
<tr>
<td>Millet</td>
<td>Mango</td>
<td>Hard cheese</td>
<td>Cucumber</td>
<td>- Almond butter</td>
<td>About 10-20 grams of carbs:</td>
<td></td>
</tr>
<tr>
<td>Quinoa</td>
<td>Melon</td>
<td>(1 ½ oz.)</td>
<td>Eggplant</td>
<td>Cottage cheese</td>
<td>- ¼ cup of dried fruit &amp; nut mix</td>
<td></td>
</tr>
<tr>
<td>Sorghum</td>
<td>Nectarine</td>
<td>Shredded cheese (¼ cup)</td>
<td>Greens (collard, kale, mustard, spinach)</td>
<td>Cheese</td>
<td>- 1 cup chicken noodle soup</td>
<td></td>
</tr>
<tr>
<td>Starchy Vegetables</td>
<td>Orange</td>
<td>Ricotta cheese (¼ cup)</td>
<td>Mushrooms</td>
<td>Edamame</td>
<td>- 1 small apple or orange</td>
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</tr>
<tr>
<td>Parsnip</td>
<td>Peaches</td>
<td>Processed cheese (2 oz.)</td>
<td>Onions</td>
<td>Egg</td>
<td>3 cups light popcorn</td>
<td></td>
</tr>
<tr>
<td>Plantain</td>
<td>Pears</td>
<td>Cottage cheese (2 cups)</td>
<td>Pea pods</td>
<td>Egg substitute</td>
<td>1 ½ cup hummus &amp; 1 cup raw, fresh-cut veggies</td>
<td></td>
</tr>
<tr>
<td>Potato</td>
<td>Pineapple</td>
<td></td>
<td>Peppers</td>
<td>Egg whites</td>
<td>2 rice cakes &amp; 1 tbsp. of peanut butter</td>
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<tr>
<td>Pumpkin</td>
<td>Plums</td>
<td></td>
<td>Salad greens (romaine, arugula)</td>
<td>Hummus</td>
<td>About 30 grams of carbs:</td>
<td></td>
</tr>
<tr>
<td>Acorn squash</td>
<td>Strawberries</td>
<td></td>
<td>Tomatoes</td>
<td>Peanut butter</td>
<td>6 oz. light yogurt &amp; ½ cup of berries</td>
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</tr>
<tr>
<td>Butternut squash</td>
<td>Watermelon</td>
<td></td>
<td>Turnips</td>
<td>Tempeh</td>
<td>1 English muffin &amp; 1 tbsp. low-fat margarine</td>
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<tr>
<td>Green peas</td>
<td></td>
<td></td>
<td>Zucchini</td>
<td>Tofu</td>
<td>½ cup whole grain cereal &amp; ½ cup of fat-free milk</td>
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<tr>
<td>Corn</td>
<td>Lentils</td>
<td></td>
<td></td>
<td>Albacon tuna</td>
<td>1 medium banana &amp; 1 tbsp. peanut butter</td>
<td></td>
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<tr>
<td>Legumes/Beans</td>
<td>Black beans</td>
<td></td>
<td></td>
<td>Lentils</td>
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<tr>
<td>Lentils</td>
<td>Pinto beans</td>
<td></td>
<td></td>
<td>Black beans</td>
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</tbody>
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Through better meal planning, you can start living a healthier lifestyle. Above is a food list to help guide you at each meal. It is important to plan your choices and use the Plate Method to create healthy and well-balanced meals. Don’t forget to think about portion sizes, too. Sometimes the portion you're planning to eat may not be the same as the recommended serving size. Serving sizes are not exact and do not indicate the carb counts.

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Carbohydrate Summary

- Carbohydrates are the primary energy source for your body to function.
- AICR’s current recommendations include 2/3 of your plate be from complex carbohydrates.
- Choose foods that contain fiber and starch.
- Limit added sugars.
- Strive for balanced meals that include carbohydrates, protein, and fats at each meal to balance your blood sugar!
Questions?
Resources

- https://my.clevelandclinic.org/health/articles/15416-carbohydrates