Culinary Institute of America

Culinary Intensive Workshop Day 2

Culinary Institute of America

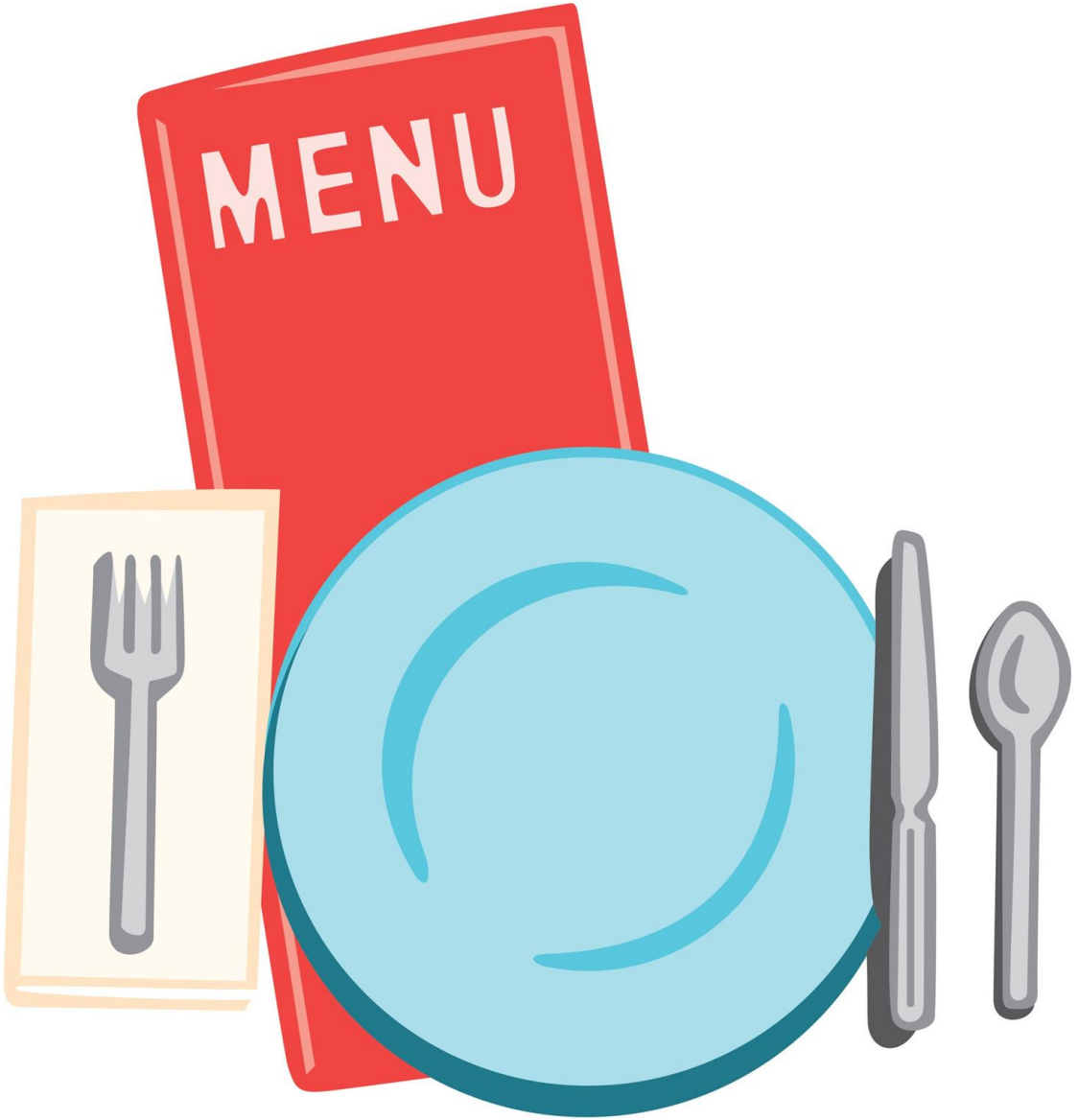
TEACHING KITCHEN COLLABORATIVE

Day 2

Flavor Dynamics, Principles of Meal Planning, Healthy Carbohydrates
Cooking Techniques of Pulses, Grains, Legumes, and Potatoes
Salad Dressings

Day Overview

9:00-9:15	Start in kitchen with cooking beans
9:20-10:20	Lecture in PDR
10:30-11	Tasting/Demo
11-1:30	Production
1:30-2	Lunch from production
2-2:15	Reset kitchen
2:15-2:30	Wrap Up



Learning Objectives

By the end of this day, you should be able to …

- Understand the 5 basic tastes.
- Learn ways to create dishes with complete proteins using pulses, grains, and legumes.
- Understand how to properly cook and store grains and legumes for weekly meal preparations.
- Discuss the benefit of weekly meal preparation for maximum ease, convenience and creativity.
- Identify the ingredients used in basic types of salad dressings
- Make a variety of salads using greens, vegetables, pulses and legumes
- Cook a variety of carbohydrates including pulses, grains, pasta and potatoes
- Know which potatoes are suitable for various cooking techniques
- Explain how carbohydrate quality and processing influence blood glucose response and metabolic health.
- Describe the role of resistant starch and dietary fiber in supporting gut and metabolic health.
- Identify the nutritional benefits of sweet potatoes and other root vegetables.

Lecture Overview

Carbohydrates

- Refined and Whole Grains
- Glycemic Index/Load
- Impact on blood glucose
- Low Carb and Ketogenic Diets
- Fiber (soluble/insoluble)
- Potatoes
- Resistant Starch
- Legumes

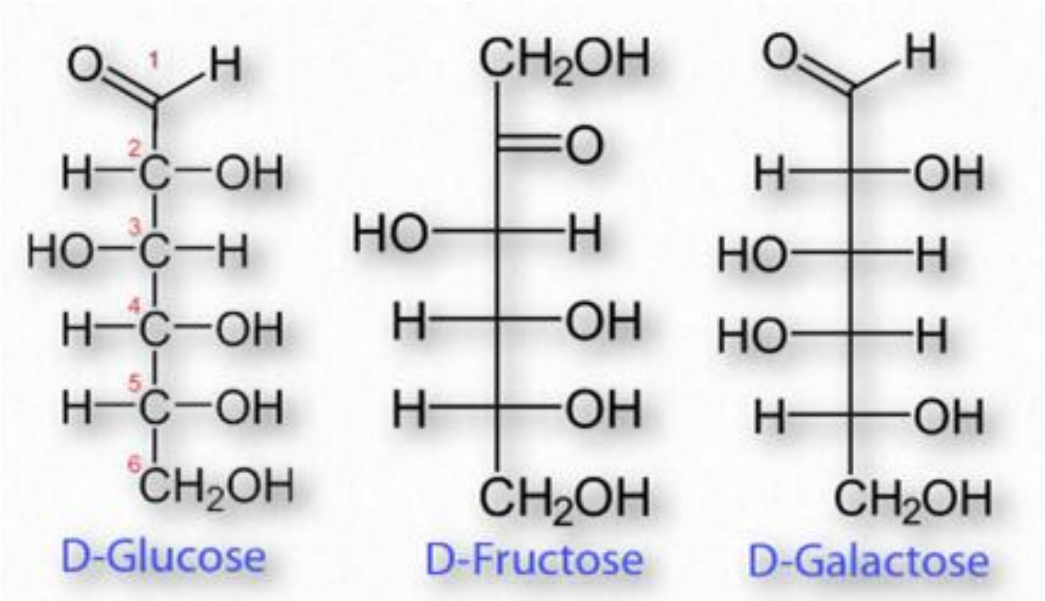
Highlight on vinegar

Carbohydrates

- What they are
- Why our bodies need them
- Differences between types of carbohydrates
- Impact on blood sugars
- What is a low carb diet and why could it be good or not good

What is a Carb?

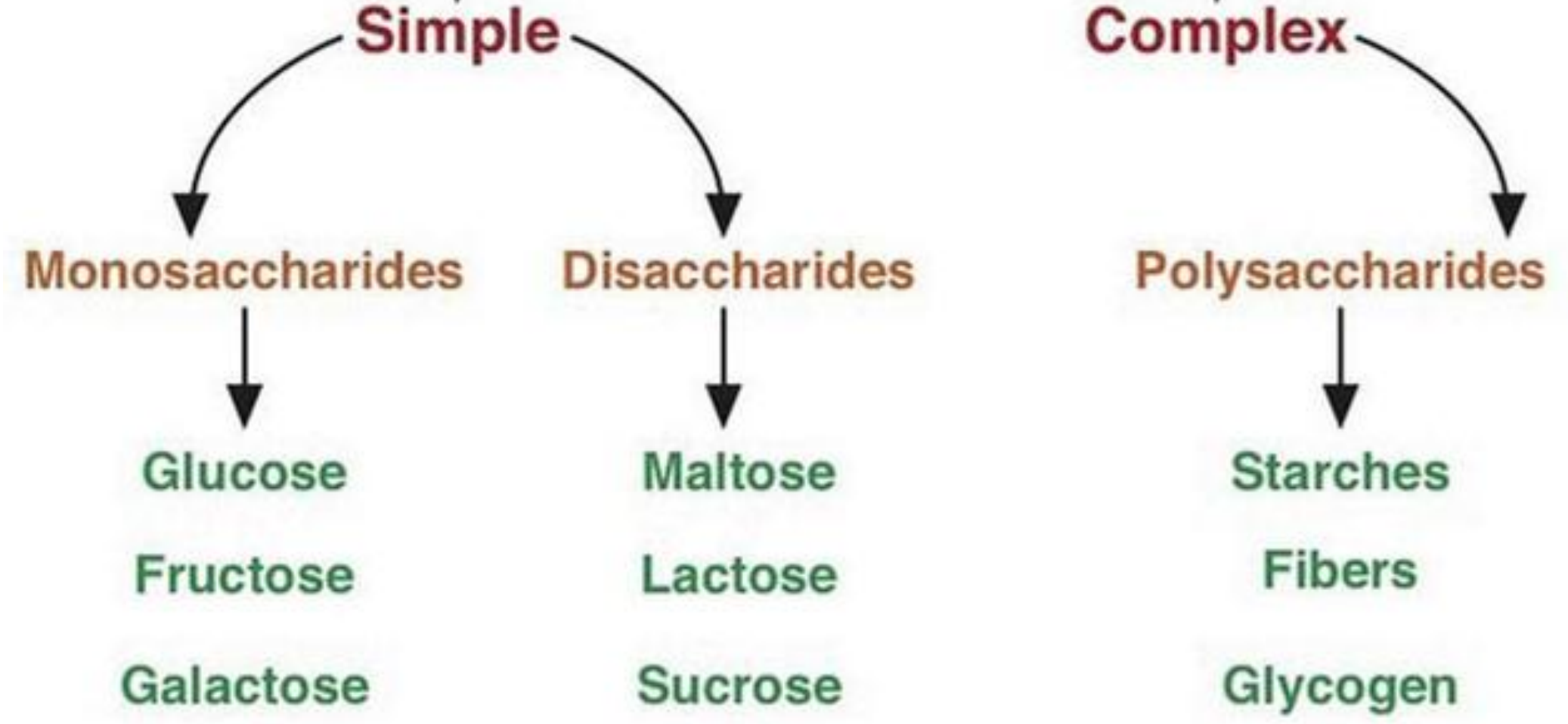
- 1 of the 3 essential macronutrients human bodies need
- Main source of energy to fuel cells
- Cells prefer glucose energy
  - The brain can only run on glucose
  - Carbs most efficient foods to provide glucose
- “Carbohydrate” = made of carbon, hydrogen and oxygen



Common sugar structures

Carbohydrates

"hydrates of carbon" C(H2O) *n*



Food Categories of Carbohydrates

Grains

Starchy vegetables

Legumes

Fruits

Sugar
(and sugary foods like **cake**)

Dairy

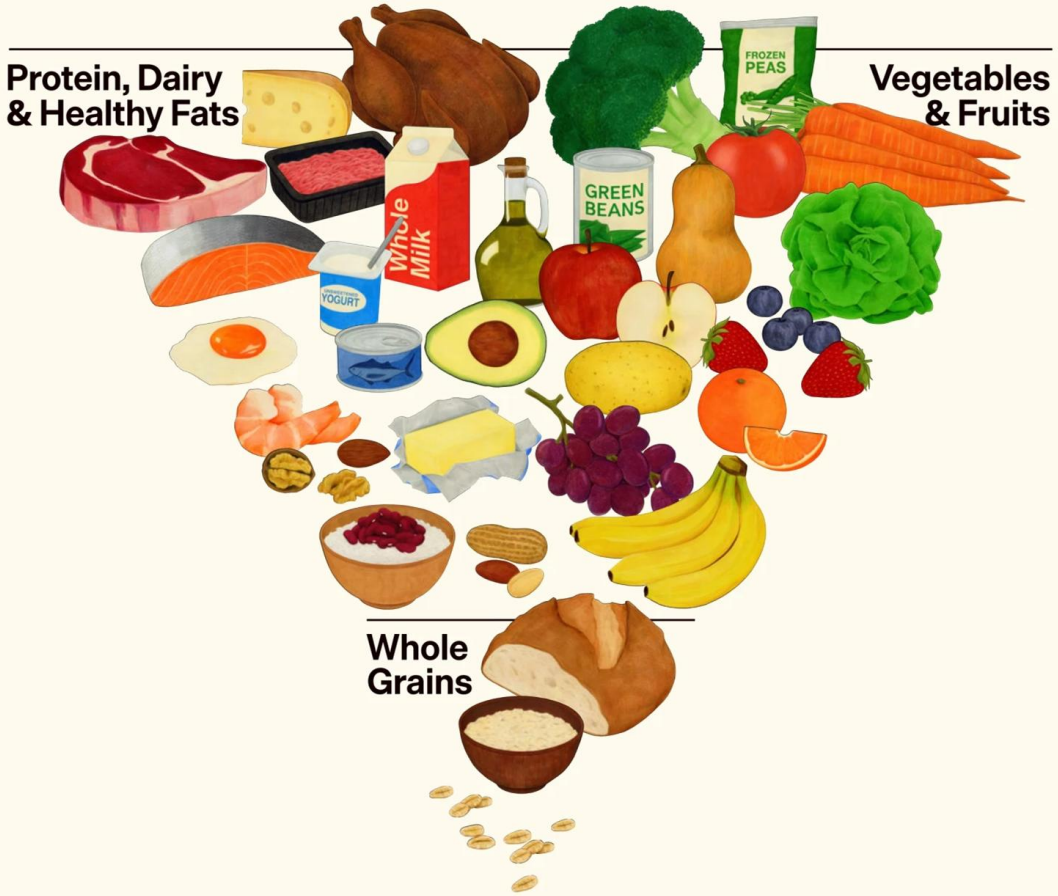
TODAYS FOCUS:

- **Grains**
- **Legumes**
- **Potatoes (starchy veg)**

New Guidelines

Focus on Whole Grains

- Prioritize fiber-rich whole grains.
- Significantly reduce the consumption of highly processed, refined carbohydrates, such as white bread, ready-to-eat or packaged breakfast options, flour tortillas, and crackers.
- Whole grains serving goals: 2–4 servings per day, adjusting as needed based on your individual caloric requirements.

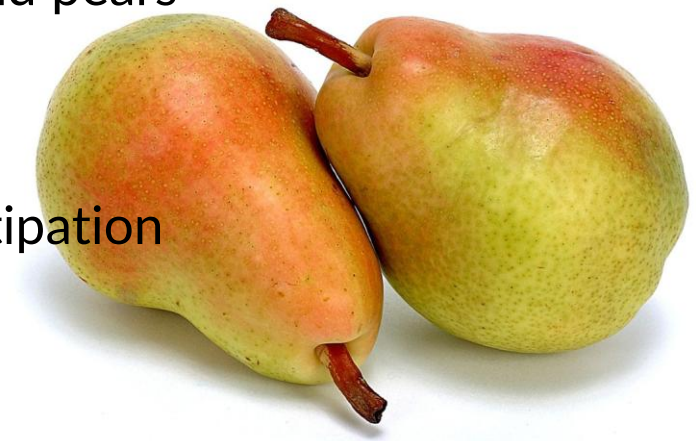


Fiber

Non-digestible carbohydrate – adds bulk to meals and helps feel full longer

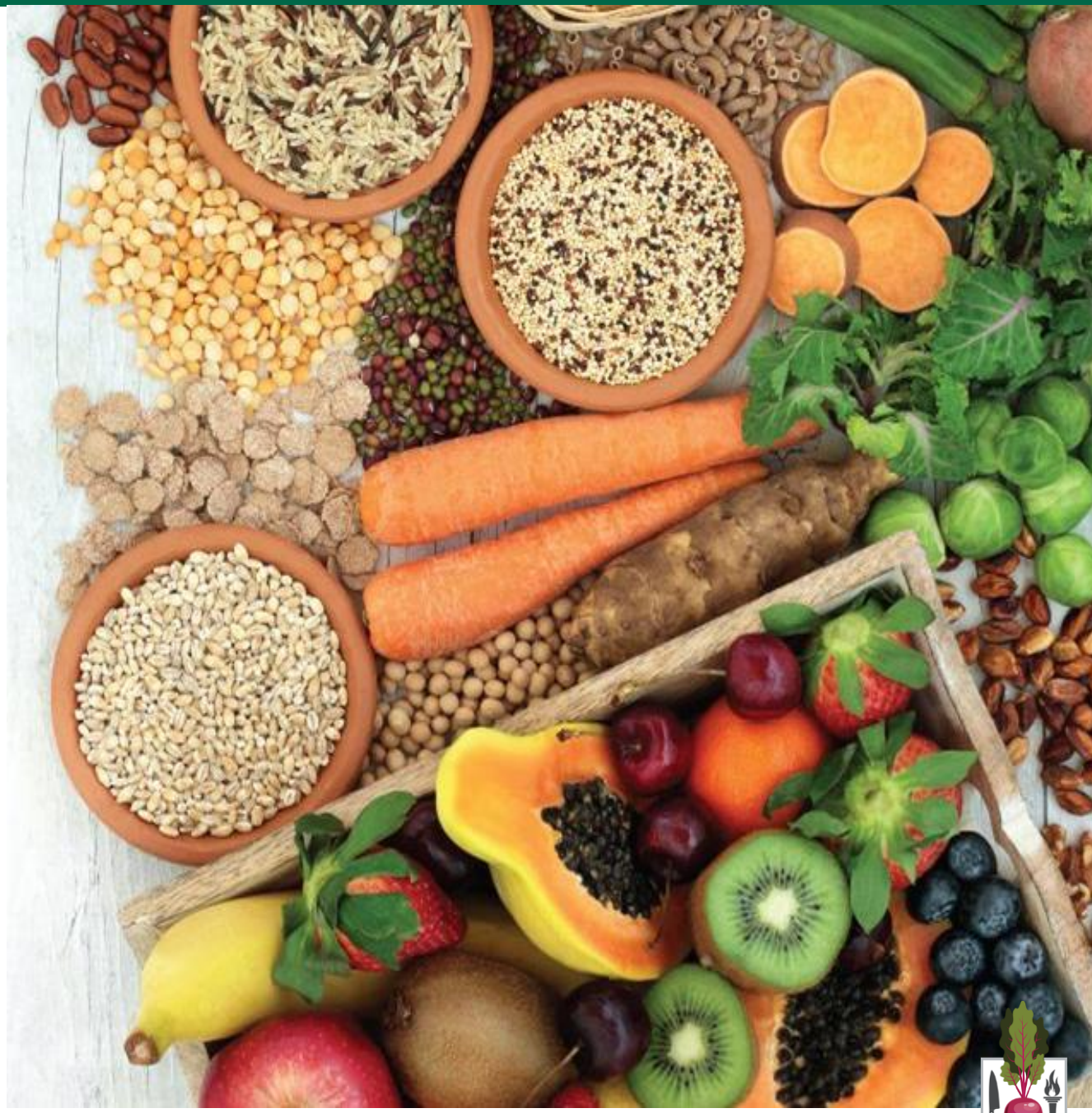
2 main types of fiber:

- **Soluble** fiber:
  - Dissolves in water, forms gel-like substance in the stomach.
  - Examples: oats, beans & legumes, fruits like apples, bananas and pears
- **Insoluble** fiber:
  - Does not dissolve in water, adds bulk to stool / prevents constipation
  - Examples: wheat bran, nuts & seeds, vegetables like kale



Health Effects of Starch and Fibers

- Heart disease
  - Lowers blood pressure, reduced inflammation, improved blood lipids
- Diabetes
  - Slows glucose absorption
- GI health
  - Increase stool weight, prevent constipation, and reduce transit time
  - Ample fluids
- Weight management
  - High-fiber foods and whole grains
- Colon Cancer
  - Diluting, binding, and removing harmful agents



Glycemic Index

Measures how quickly a carbohydrate food raises blood sugar levels (compared to glucose)

- Higher GI foods = raises blood sugar quickly
- Glucose = 100
- White Bread = 95 | Whole wheat bread = 51-70
- Potatoes = 85
- Watermelon = 75
- Oatmeal = 55
- Snap peas = 5

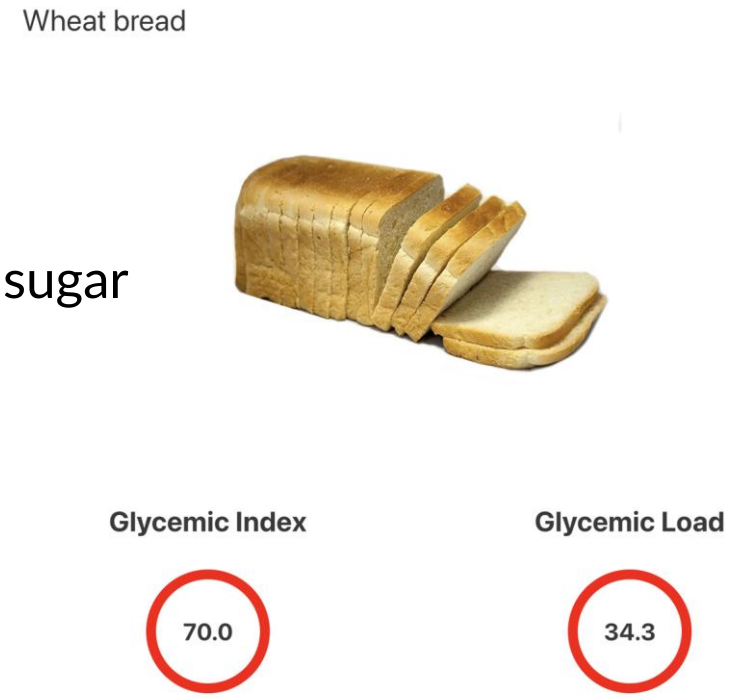
Glycemic Index

Grains / Starchs		Vegetables		Fruits		Dairy		Proteins	
Rice Bran	27	Asparagus	15	Grapefruit	25	Low-Fat Yogurt	14	Peanuts	21
Bran Cereal	42	Broccoli	15	Apple	38	Plain Yogurt	14	Beans, Dried	40
Spaghetti	42	Celery	15	Peach	42	Whole Milk	27	Lentils	41
Corn, sweet	54	Cucumber	15	Orange	44	Soy Milk	30	Kidney Beans	41
Wild Rice	57	Lettuce	15	Grape	46	Fat-Free Milk	32	Split Peas	45
Sweet Potatoes	61	Peppers	15	Banana	54	Skim Milk	32	Lima Beans	46
White Rice	64	Spinach	15	Mango	56	Chocolate Milk	35	Chickpeas	47
Cous Cous	65	Tomatoes	15	Pineapple	66	Fruit Yogurt	36	Pinto Beans	55
Whole Wheat Bread	71	Chickpeas	33	Watermelon	72	Ice Cream	61	Black-Eyed Beans	59
Muesli	80	Cooked Carrots	39						
Baked Potatoes	85								
Oatmeal	87								
Taco Shells	97								
White Bread	100								
Bagel, White	103								

Low GI (<55), Medium GI (56-69) and High GI (70>)

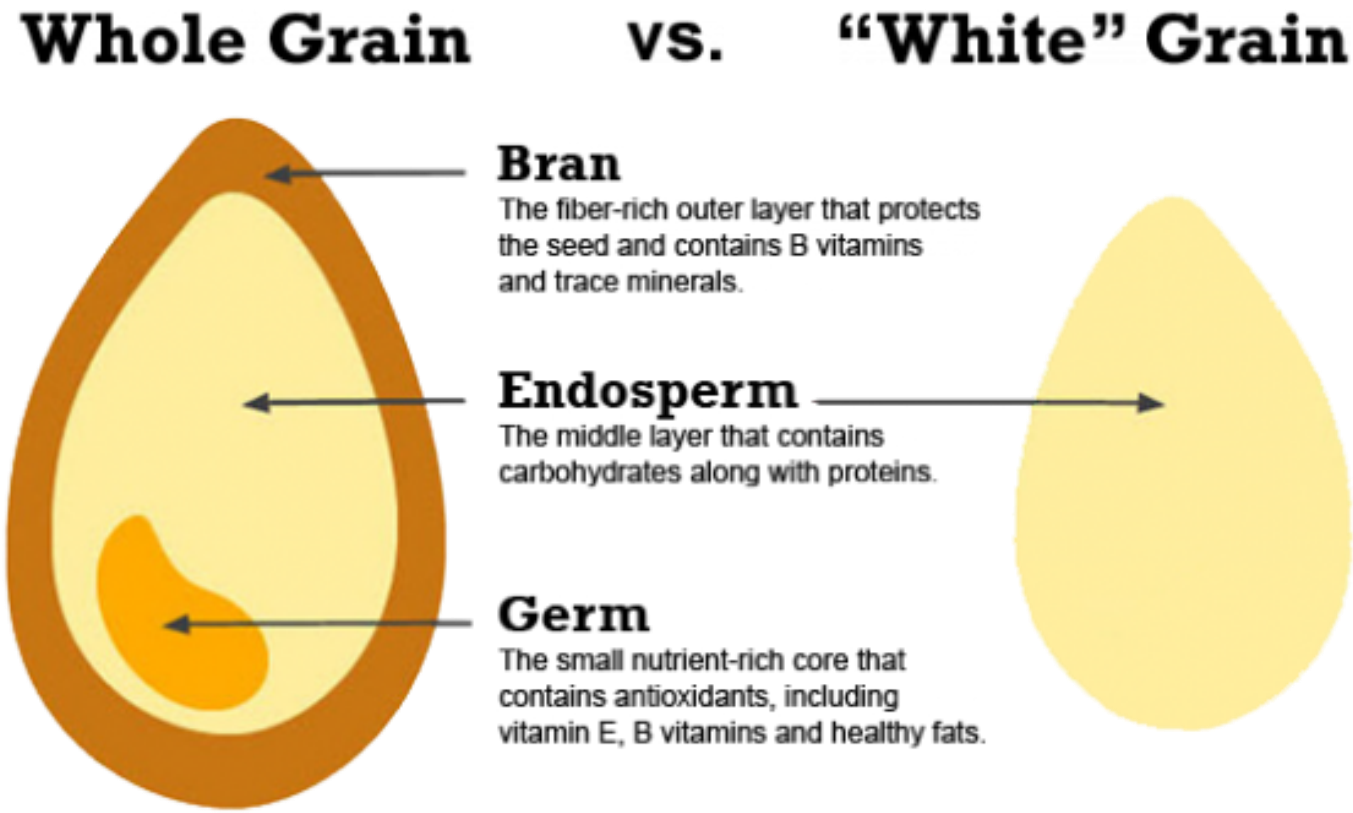
Glycemic Load

- Measure of how QUICKLY and HOW MUCH a food will raise blood sugar levels
- Considers glycemic index AND the amount of carbohydrates contained in the food
- GL = (GI x grams of carbohydrates per serving) / 100
  - Low GL (0-10): little impact on blood sugar levels
  - Moderate GL (11-19): may cause a moderate increase in blood sugar
  - High GL (20+): can significantly raise blood sugar levels



Refined & Enriched Grains

- Process by which the outer layer of grain is removed
  - Removes fiber and nutrients
  - Enriched grains ‘add’ nutrients back in
- Enriched or refined grains are not whole grains
  - Rice, wheat, other grains
  - Enriched provide folate - prevents neural tube defects



Consider Quality

Higher-Quality

Un-processed = best choices

- Whole Grains:
  - brown rice, quinoa, farro, millet, oats
- Non-starchy veggies:
  - Broccoli, carrots, peppers, string beans
- Legumes:
  - Beans, peas, lentils
- Fruit
- Starchy veggies:
  - Corn & potatoes in moderation

Minimally-processed = better

- Whole-grain packaged foods like bread, cereal, pasta, tortillas, etc.

Lower-Quality

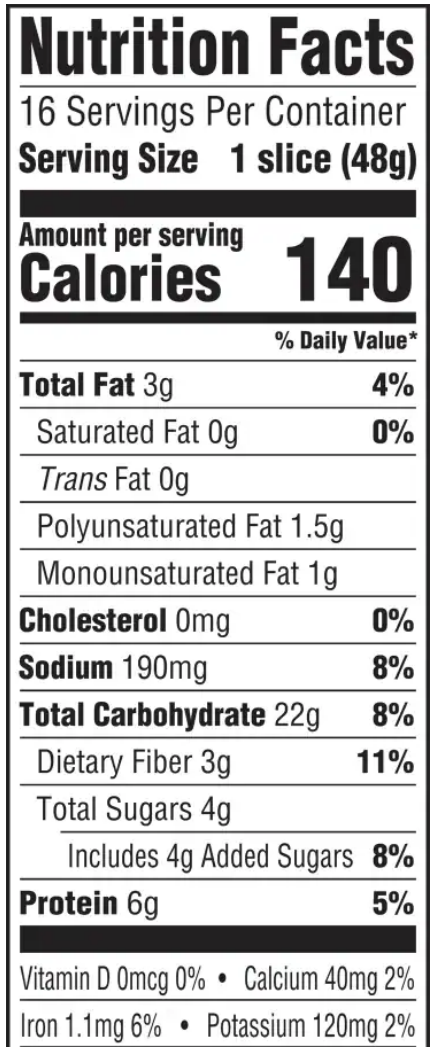
Processed and refined = limit

- White rice
- White breads, cereals, pastas, etc.
- Juice
- Sugar-sweetened beverages
- High-fructose corn syrup
- Most sodas and many packaged items
- Sugar / brown sugar
- Sweets, pastries, candy

Whole Grain Choices

- Amaranth
- Barley
- Brown, Black, Red or Wild Rice
- Buckwheat
- Bulgur
- Farro
- Kamut
- Millet
- Quinoa
- Rye
- Oats
- Spelt
- Teff
- Wheat Berries

Quality of Bread



Nutrition Facts

16 Servings Per Container

Serving Size 1 slice (48g)

Amount per serving

Calories 140

	% Daily Value*
Total Fat 3g	**4%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Polyunsaturated Fat 1.5g	
Monounsaturated Fat 1g	
Cholesterol 0mg	**0%**
Sodium 190mg	**8%**
Total Carbohydrate 22g	**8%**
Dietary Fiber 3g	**11%**
Total Sugars 4g	
Includes 4g Added Sugars	**8%**
Protein 6g	**5%**

Vitamin D 0mcg 0% • Calcium 40mg 2%

Iron 1.1mg 6% • Potassium 120mg 2%

INGREDIENTS: WHOLE WHEAT FLOUR*, WATER, WHEAT GLUTEN*, CANE SUGAR*, SUNFLOWER SEEDS*, WHOLE WHEAT SOURDOUGH* (WATER, FERMENTED WHOLE WHEAT FLOUR*), WHOLE WHEAT BERRY*, YEAST, OATS*, VEGETABLE OIL* (SOYBEAN OIL* AND/OR SUNFLOWER OIL* AND/OR CANOLA OIL*), SEA SALT, CULTURED WHEAT FLOUR*, GRAIN VINEGAR*, NATURAL FLAVOR*, CITRIC ACID. R22-097-202090

*CERTIFIED ORGANIC INGREDIENTS

CONTAINS WHEAT.

MADE IN A BAKERY THAT MAY ALSO USE SOY, MILK, TREE NUTS.

Nutrition Facts

10 servings per container

Serving size 2 Slices (57g/2.0oz)

Amount per serving

Calories 140

	% Daily Value*
Total Fat 1.5g	**2%**
Saturated Fat 0g	**0%**
Trans Fat 0g	
Polyunsaturated Fat 1g	
Monounsaturated Fat 0g	
Cholesterol 0mg	**0%**
Sodium 180mg	**8%**
Total Carbohydrate 29g	**11%**
Dietary Fiber 3g	**10%**
Total Sugars 5g	
Includes 5g Added Sugars	**11%**
Protein 5g	
Vitamin D 3.7mcg	20%
Calcium 480mg	35%
Iron 1.9mg	10%
Potassium 70mg	0%
Thiamin 0.46mg	40%
Riboflavin 0.19mg	15%
Niacin 2.6mg	15%
Folate 100mcg DFE (60mcg folic acid)	25%

INGREDIENTS: UNBLEACHED ENRICHED FLOUR (WHEAT FLOUR, MALTED BARLEY FLOUR, NIACIN, REDUCED IRON, THIAMIN MONONITRATE, RIBOFLAVIN, FOLIC ACID), WATER, SUGAR, YEAST, CONTAINS 2% OR LESS OF EACH OF THE FOLLOWING: CALCIUM CARBONATE, WHEAT GLUTEN, SOYBEAN OIL, SALT, DOUGH CONDITIONERS (CONTAINS ONE OR MORE OF THE FOLLOWING: SODIUM STEAROYL LACTYLATE, CALCIUM STEAROYL LACTYLATE, MONOGLYCERIDES, MONO- AND DIGLYCERIDES, DISTILLED MONOGLYCERIDES, CALCIUM PEROXIDE, CALCIUM IODATE, DATEM, ETHOXYLATED MONO- AND DIGLYCERIDES, ENZYMES, ASCORBIC ACID), VINEGAR, MONOCALCIUM PHOSPHATE, CITRIC ACID, CHOLECALCIFEROL (VITAMIN D3), SOY LECITHIN, CALCIUM PROPIONATE (TO RETARD SPOILAGE).

CONTAINS: WHEAT, SOY.

MANUFACTURED ON SHARED EQUIPMENT THAT ALSO PROCESSES PRODUCTS CONTAINING SESAME. MAY CONTAIN SESAME.

Gluten & Gluten Free Alternatives

Gluten proteins commonly found in barley, rye, oats, and wheat

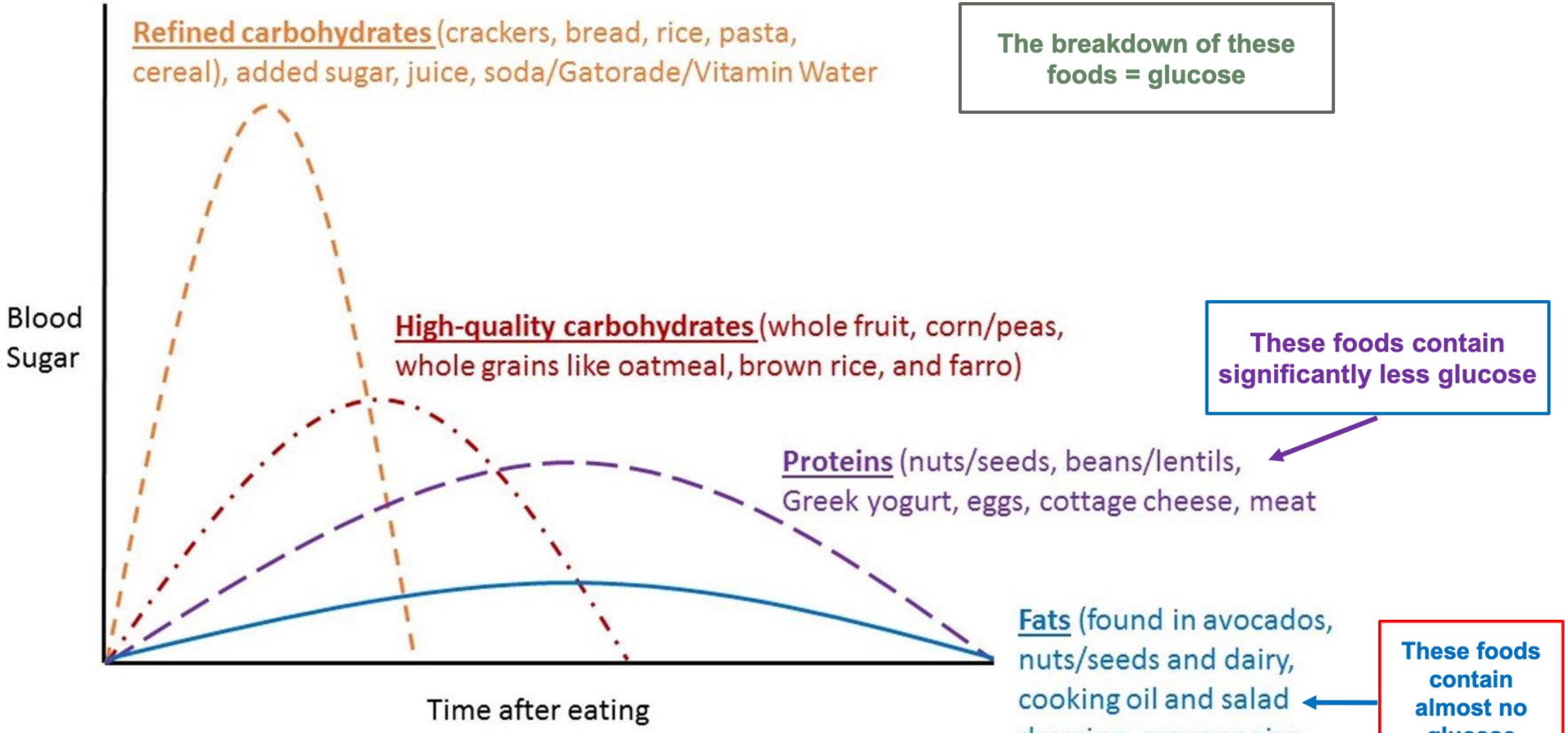
Allergy = Immune response
Sensitivity = Digestive complications

Gluten Free Flours

Flours	Carbohydrates	Protein	Fat	Fiber	Additional Trace
	%	%	%	%	
Bean	64	18.2	1.27	23.5	Iron rich
Corn	76	7	1	14	Vitamin A
Cornmeal	77	8	3	10	Vitamin A
Cornstarch	88	Trace	0	Trace	Few trace elements
Garbanzo	60	20	4	12	Potassium
Millet	73	10	3	3	Magnesium
Potato	80	8	0.05	3.5	Phosphorus, Potassium
Quinoa	66	12	5	7	Potassium, calcium
Rich (brown)	79	6	1	2	Vitamins, minerals
Sorghum	75	10	4	2	Iron, B vitamins
Soy	30	36	20	2.5	Amino acids
Wheat flour	76	10	1	3	

Carbohydrate Quality and Health

Impact of Macronutrients on Blood Sugar

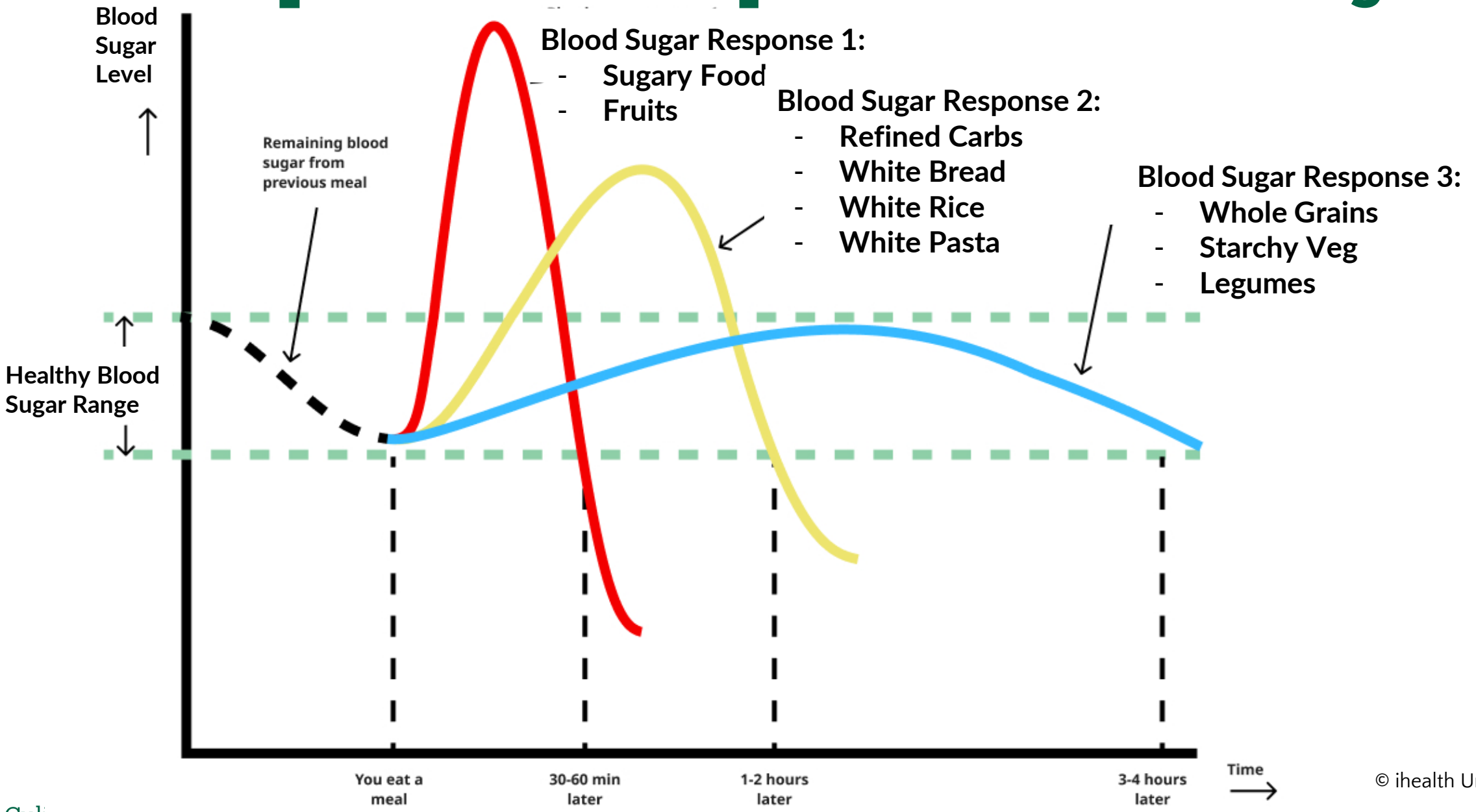


The breakdown of these foods = glucose

These foods contain significantly less glucose

These foods contain almost no glucose

Impact of Carbohydrates on Blood Sugar



Low Carbohydrate Diets

LOW CARBOHYDRATE DIET:
25-40% of calories = 51-130 grams/day

VERY LOW CARBOHYDRATE (KETOGENIC) DIET:
<10% of calories = ≤ 50 grams/day

Forces body to use proteins and fats for energy needs
By-product = ketones
Can put strain on other organs (liver) - risk of kidney stones, bone density

Can be effective in weight reduction if done correctly
Caution over types of protein and fat sources; complex carbs/whole grains/vegetables
Not recommended for long-term

Role Play

In pairs (1 group of 3); 10 minutes then switch roles

Person 1: Clinician
Person 2: Patient at annual physical (42y/o, BMI 33, pre-diabetic (A1C 5.6), HTN, full-time administrative assistant, has 2 kids ages 9 & 12) Patient identifies that they would like to be/feel healthier.

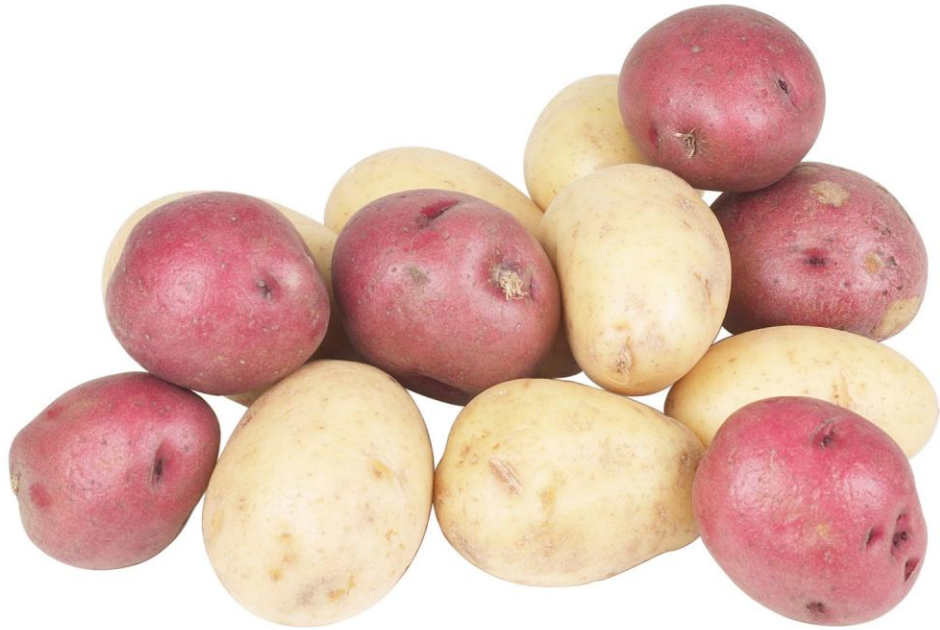
1. **What additional information would be helpful for you?**
2. **Determine what the person usually eats.**
3. **What are some options for healthier alternatives you can suggest for the patient?**
4. **Are there any services that they can be referred to to support healthier lifestyle habits?**

Potatoes: White, Sweet, Purple, Yams

- 4th most popular food in the world
- Relatively inexpensive, easy to grow, use less water than other whole grains like rice
- Can keep longer than most fresh produce
- Potatoes are high in potassium
- Have fiber but only in the skin
- High starch; type of potato varies in amount of starch – impacts cooking techniques
- High glycemic load

Eating Potatoes

- Potato chips/ fries associated with poor health outcomes
- Vegetable but less fiber and more starch
  - Consider portion sizing
- Balanced plate with proteins, fats and non starchy veggies and fruits



Resistant Starch

- Found in bananas, legumes, whole grains and cooked potatoes
- Not digested in small intestine
- Ferments in large intestine
- Acts like fiber:
  - Feed good gut bacteria
  - Improves digestion
  - Help control blood sugar
- Produce short chain fatty acids
  - Nourish colon cells, reduce inflammation, and support overall metabolic health.

Legumes & Pulses

- Definition and Categorization
- Note on Allergies
- Macro & Micronutrient Composition
- Cost effective considerations
- Environmental win

Pulses & Other Legumes

- Legumes – anything in the ‘pea’ or fabaceae family
  - Fresh and dried seeds
  - Green peas, garbanzo beans, kidney beans, soybeans, peanuts
- Pulses are subset category of legumes
  - Refer to dried seed of legume plants
  - Dried beans, lentils, split peas

Legume Allergies

- Peanuts are a legume, not a tree nut!
- Some peanut proteins resemble those in soy, lupin, chickpeas, lentils, and peas
- Clinical reactions (actual allergic symptoms) to multiple legumes are *less common* than blood/skin test cross-reactivity suggests
- Most people with peanut allergy can safely eat other legumes
  - >90% of peanut-allergic individuals tolerate soy, beans, peas, and lentils.
- *Lupin/lupine (a bean-based flour used in some baked goods, especially in Europe) is an exception:
  peanut-allergic individuals are more likely to react to lupin than to other legumes.

Composition & Benefits

- High in protein & complex carbs, including fiber
- Low in fats (unsaturated fats)
- Contain potassium, folate, iron and polyphenols that have antioxidant activity
- Source of prebiotics that feed gut flora
- Animal studies show lentils can lower blood pressure, blood cholesterol, and blood glucose
- Human studies show lentils may improve cholesterol levels in people with diabetes and may protect against breast cancer in women

Economical – buy on sale, keep in pantry

- Inexpensive source of protein, vitamins, complex carbohydrates, and fiber
- Promoted as a way to help eradicate hunger and malnutrition
- Dried
  - Cheapest, self stable
  - Soaking/Cooking times vary
- Canned
  - Salt free or low sodium best
  - Already cooked, time friendly, self stable

Canned or Frozen Fruits & Vegetables

Frozen fruits & vegetables:

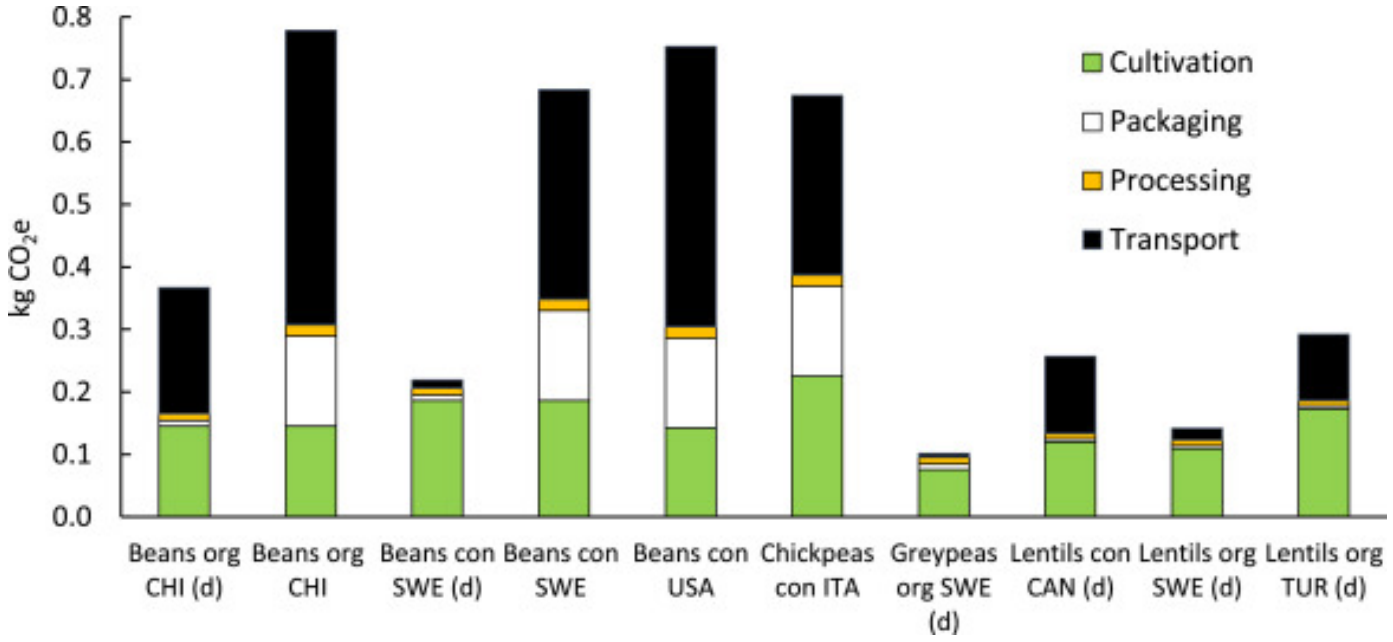
- Picked at the peak of the season = nutritious!
- Pre-cut/chopped to size
- Blanched before frozen (less time to cook)
- Often cheaper
- Can stay in the freezer for a long time

Canned fruits & vegetables:

- Can be high in salt (rinse off or buy salt-free)
- Can be in syrup (rinse off or buy ‘in own juice’)

Environmental Impact of Legumes

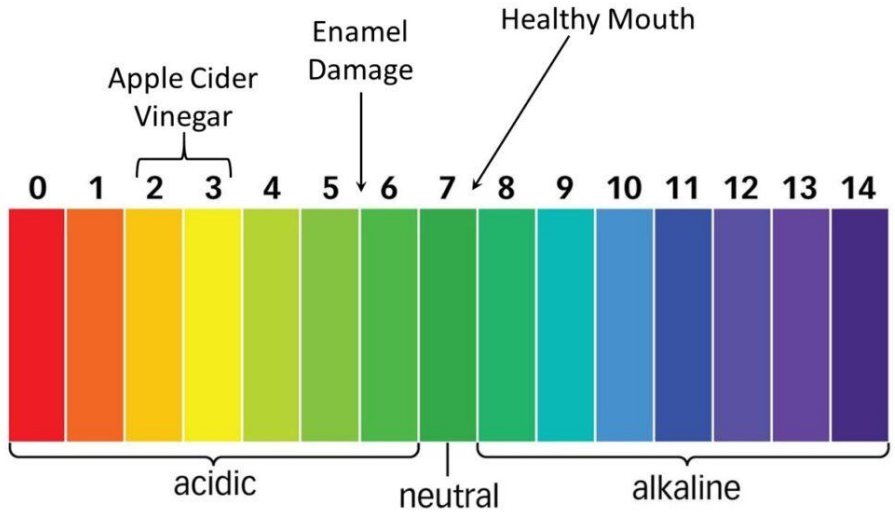
- Low environmental impact with big nutrition composition, combined with low cost = biggest bang for buck
- 2019 *EAT-Lancet* report outlines planetary health diet, legumes recommended daily
  - 50 grams of legumes (about ¼ cup)
  - Primary source of sustainable plant-based protein
  - Emphasized as an everyday food group



https://doi.org/10.1016/j.spc.2021.01.017

Food Spotlight: Apple Cider Vinegar

- Twice fermented apples
- Contain acetic acid, probiotics (“mother”) and antioxidants
- Highly acidic, bitter flavor
  - Need to dilute before consuming
- Many health claims to fame (ie. reducing heartburn)
- Can reduce glycemic index response of carbohydrate foods when consumed at same meal/beginning of meal
- Has antimicrobial properties, people often use it as a natural remedy to fight bacterial, viral, and fungal infections.
  - Hair wash, cleaning agent



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Any Questions?