CANCER'S SWEET TRUTH
A LOOK AT THE CANCER–SUGAR CONNECTION

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Nutrition and Health

- The top 10 causes of death in the United States include:
  - #1 = Heart disease
  - #2 = Cancer
  - #3 = Stroke
  - #6 = Diabetes

- Decades of research highlight the impact of nutrition on preventing, and in some cases reversing, these diseases

Nutrition and Health

- The leading *preventable* causes of *premature* death in the United States include:
  - High blood pressure: 395,000 deaths
  - Overweight/obesity: 216,000 deaths
  - Inadequate physical activity and inactivity: 191,000 deaths
  - High LDL cholesterol: 113,000 deaths
  - High dietary salt: 102,000 deaths
  - Low dietary omega-3 fatty acids (seafood): 84,000 deaths
  - High dietary trans fatty acids: 82,000 deaths
  - Alcohol use: 64,000 deaths
  - Low intake of fruits and vegetables: 58,000 deaths
  - Low dietary poly-unsaturated fatty acids: 15,000 deaths

Nutrition and Health

- Almost one in two men and women—approximately 41 percent of the population—will be diagnosed with cancer during their lifetime.

- Dietary factors are associated with risk of some types of cancer, including breast (post-menopausal), endometrial, colon, kidney, mouth, pharynx, larynx, and esophagus.

Nutrition and Health

- The American Cancer Society says:
  - Eat a healthy diet, with an emphasis on plant sources.
  - Eat 5 or more servings of a variety of vegetables and fruits every day.
  - Choose whole grains over processed (refined) grains.
  - Limit intake of processed and red meats.

- The American Institute for Cancer Research says:
  - Choose mostly plant foods.
  - Limit red meat and avoid processed meat.
  - Aim for 2/3 (or more) of your plate to be filled with vegetables, fruits, whole grains, or beans, and 1/3 (or less) filled with animal protein.
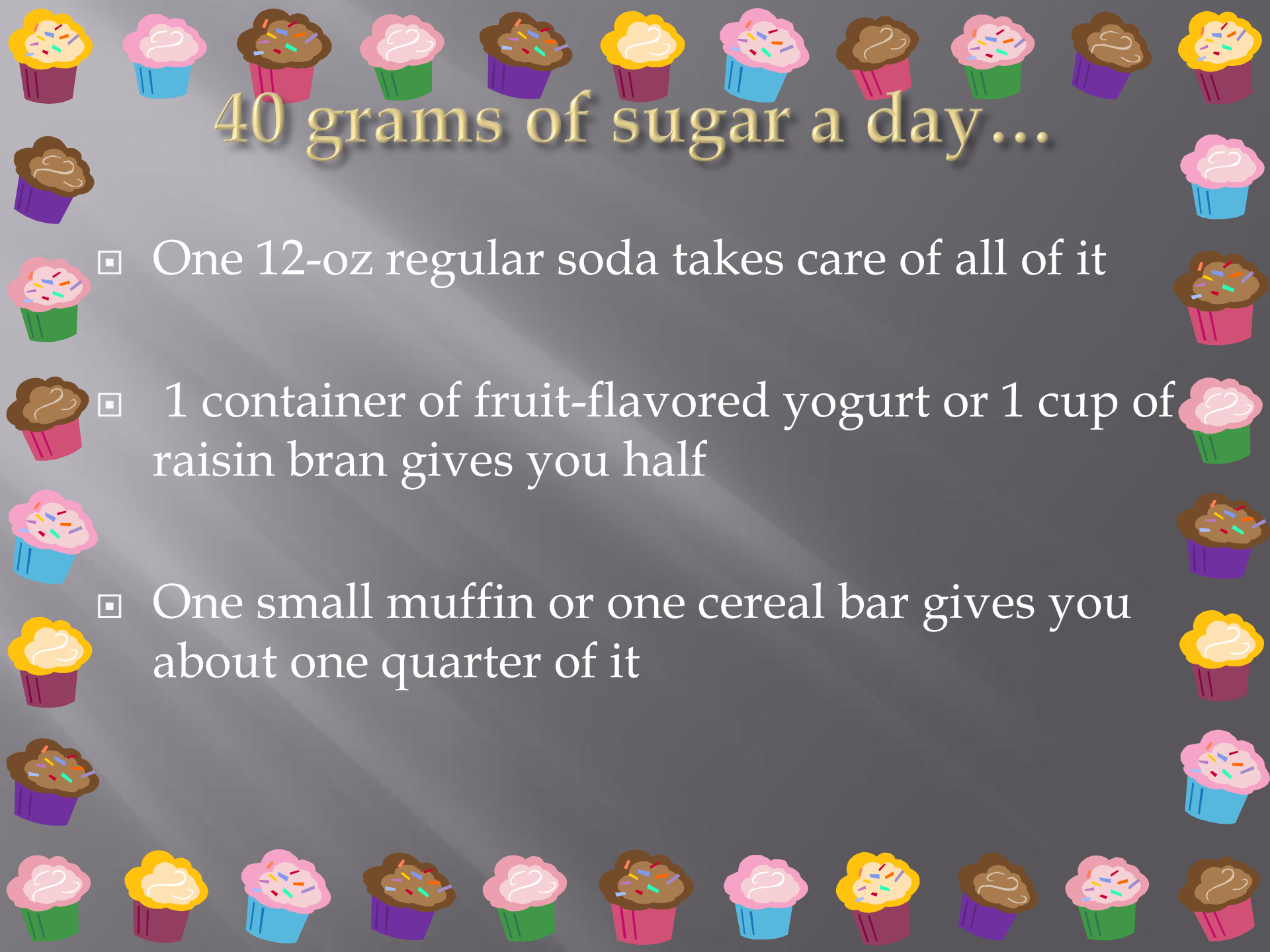
Nutrition and Health

- Calories from solid fats, added sugars, and refined grains generally replace nutrient-dense foods and beverages

- The US Dietary Guidelines recommend:
  - No more than 10% of total daily calories should come from simple sugar

Let's do the Math

- Sugars have about 4 calories per gram

- 1 teaspoon of sugar has 4 grams

- 10% of 1600 calories is 160 calories

- 160 divided by 4 gives you 40 grams or a total of 10 teaspoons of sugar per day

40 grams of sugar a day…

◫ One 12-oz regular soda takes care of all of it

◫ 1 container of fruit-flavored yogurt or 1 cup of raisin bran gives you half

◫ One small muffin or one cereal bar gives you about one quarter of it

Does Sugar Feed Cancer?

- Sugar feeds <u>every</u> cell in the body, <u>including</u> cancer cells

- Glucose, or simple sugar, is the primary energy source for all cells
  - Digestion of carbohydrate foods produces glucose

- If sugar or carbohydrate is taken out of your diet, your body will make glucose from other sources, such as protein and fat

Does Sugar Feed Cancer?

▫ Cancer cells need sugar to grow just like healthy cells

▫ There is nothing particular about sugar that "feeds" cancer cells any more than <u>sugar feeds all cells</u> in our body

Should You Be Concerned About Sugar?

- Eating a lot of sugar causes your body to produce a lot of insulin

- Insulin is a hormone that can tell cells to grow
  - This is good for healthy cells

- Excess insulin may encourage some types of cancer cells to grow more

How Does Insulin Work?

- After eating and digesting carbohydrate food, the pancreas produces insulin to move glucose from the blood into the cells where it is used for energy or stored as glycogen
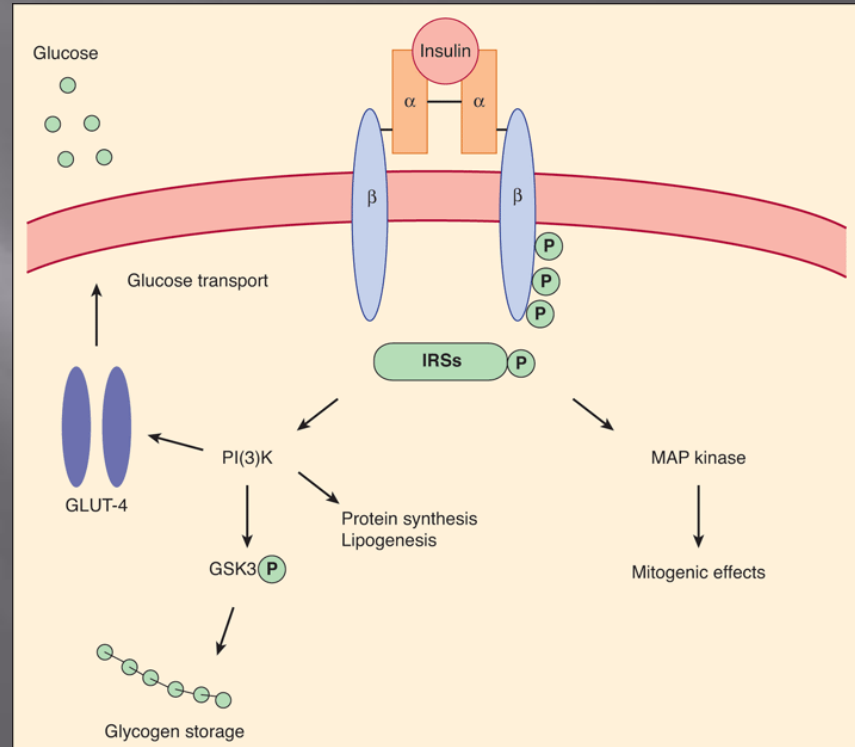
How Does Insulin Work?

- High sugar foods are absorbed into the blood quickly and cause insulin to rise quickly

- If cells do not respond to insulin—*Insulin Resistance*—the pancreas makes even more insulin to force cells to respond
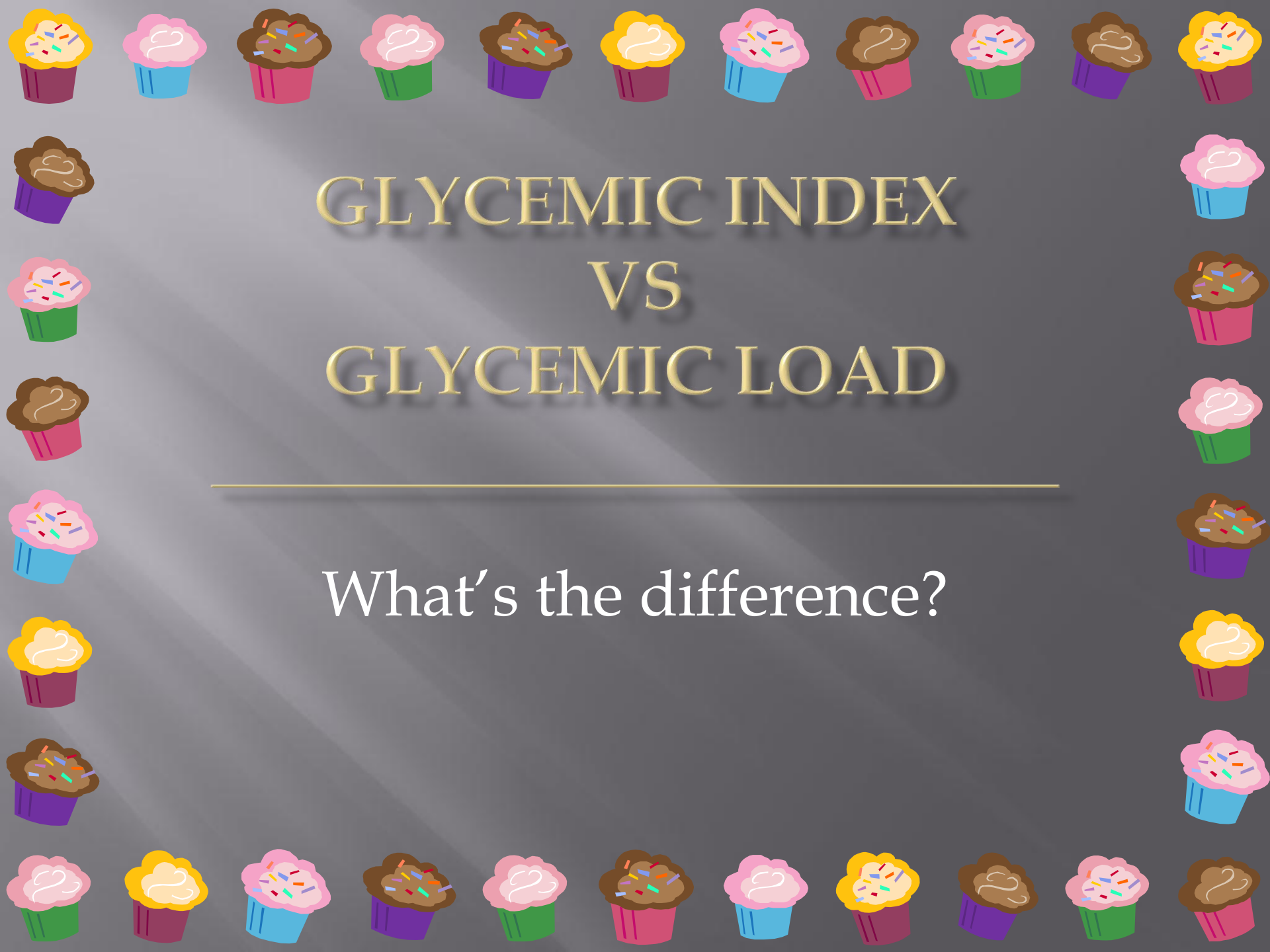 - As may be the case with overweight, obesity, pre-diabetes, diabetes

Should You Avoid All Sugar?

- No, and nor should you avoid all carbohydrates
- Complex carbohydrates provide important nutrients, such as vitamins, minerals, fiber, and protein that enable our bodies to function and stay healthy
- Complex carbohydrates include the best sources of super foods that can help fight cancer
  - Vegetables, fruits, whole grains, and legumes (beans, lentils and peas)

How Can You Reduce Spikes In Insulin Production?

- Eating protein, fat, and fiber in combination even with simple sugar help the body make less insulin
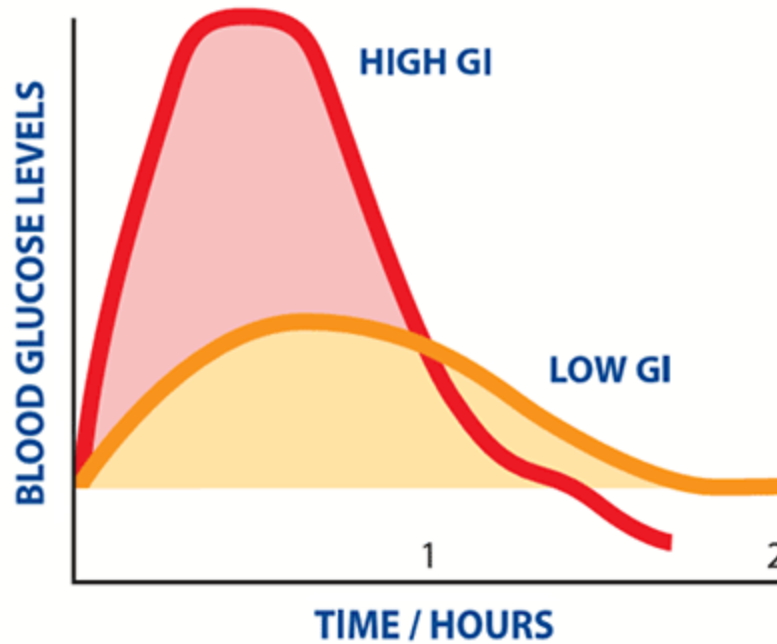
- Reduce dietary *glycemic load*

GLYCEMIC INDEX
VS
GLYCEMIC LOAD

What's the difference?

Glycemic Index (GI)

- Measures carbohydrates' effect on blood sugar levels

- 50 grams of digestible carbohydrate (test food) is compared to 50 grams of pure glucose or white bread (control food)

- The test food value represents a percentage relative to the control food, glucose

The amount of carbohydrate in the reference and test food must be the same.

http://www.glycemicindex.com

Glycemic Index of Common Foods

- Mashed potato 85%
- Cornflakes 81%
- White rice 64%
- Orange 42%
- Lentils 31%
- Turkey 0
- Olive oil 0

Glycemic Load (GL)

- Describes the quality (GI) and quantity of carbohydrate consumed in a meal or diet

- GL better reflects a food's effect on the body than either the amount of carbohydrate or the glycemic index alone

- The amount of carbohydrate in a food multiplied by the GI of that carbohydrate (as a %)

How Does GL Work?

- How about a **½ cup of carrots**? GI of 47% and it contains about 6 g carbohydrate
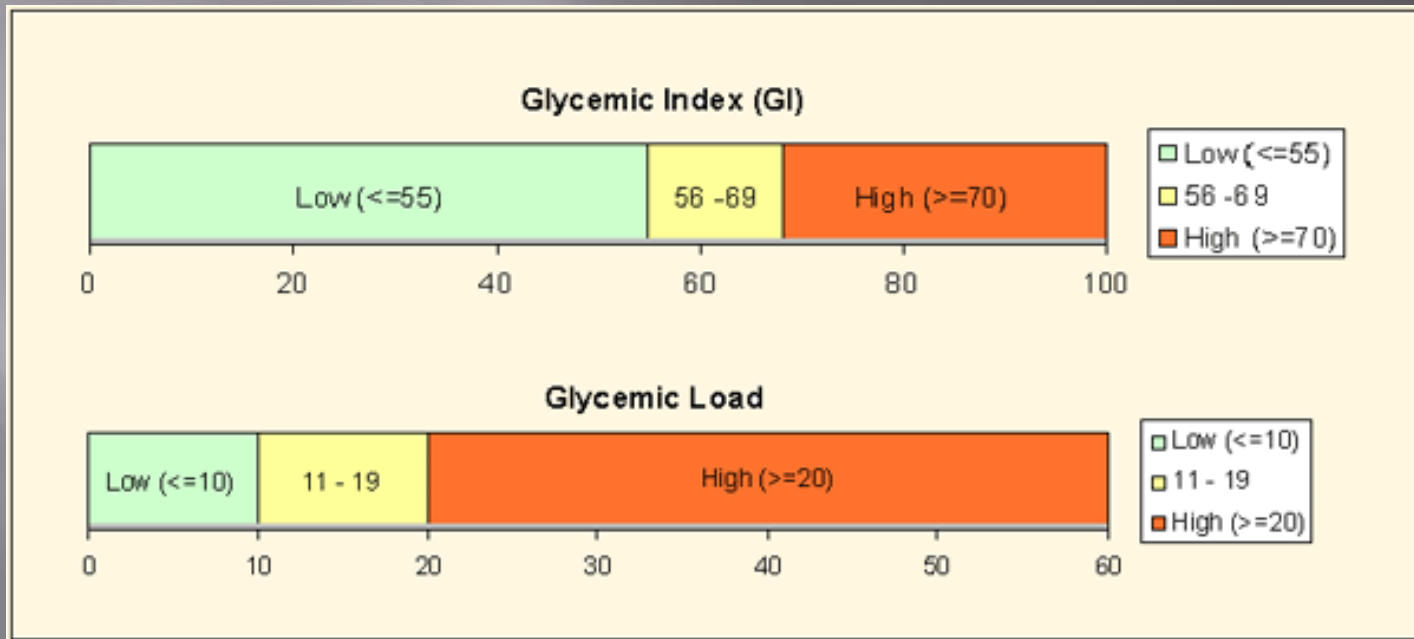
  GL + 47 x 6/100= 3g

- Let's take a **medium apple**. It has a GI of 40% and it contains 15 grams of carbohydrate

  GL = 40 x 15/100 = 6 g

- What about a **small baked potato**? Its GI is 80% and it contains 15 g of carbohydrate

  GL = 80 x 15/100 = 12 g

Glycemic Index & Glycemic Load Rating Chart

Food Values: Glycemic Index/Glycemic Load

	Low GI	Med GI	High GI
Low GL	All-bran cereal (8,42) Apples (6,38) Carrots (3,47) Peanuts (1,14) Strawberries (1,40) Sweet Corn (9,54)	Beets (5,64) Cantaloupe (4,65) Pineapple (7,59) Sucrose, i.e. table sugar (7,68)	Popcorn (8,72) Watermelon (4,72) Whole wheat flour bread (9,71)
Med GL	Apple juice (11,40) Bananas (12,52) Fettucine (18,40) Orange juice (12,50) Sourdough wheat bread (15,54)	Life Cereal (16,66) New potatoes (12,57) Wild rice (18,57)	Cheerios (15,74) Shredded wheat (15,75)
High GL	Linguine (23,52) Macaroni (23,47) Spaghetti (20,42)	Couscous (23,65) White rice (23,64)	Baked Russet potatoes (26,85) Cornflakes (21,81)

Source: Revised International Table of Glycemic Index (GI) and Glycemic Load (GL), *The American Journal of Clinical Nutrition*, July 2002

Tips For Finding a Healthy Balance

- Choose naturally occurring sugar, such as that found in whole fruit

- Avoid concentrated sweets, such as, soda, fruit juice, candy, cakes, cookies and desserts

- Limit "treats", such as dessert, to a couple of times a week

- Focus on healthy, unprocessed food, including vegetables, fruit, whole grains, legumes (beans, lentils, peas), nuts and seeds

Example of Healthy Balance

Lower Glycemic Load		Higher Glycemic Load	
Food	**GL**	**Food**	**GL**
1 c steel cut oats	24	1 c instant oatmeal	51
3 Tb almonds	<1	2 Tb raisins	10
6 oz yogurt, low fat	10	6 oz yogurt, low fat	10
1 orange, small	4	6 oz orange juice	10
Total meal GL	38	Total meal GL	81

Low Glycemic Load

High Glycemic Load

What Else?

- Too much of anything may not be good for us

- Reduction of high GI/GL foods and overconsumption of "healthier" carbohydrates, or substitution with high fat or high protein foods may contribute to increased caloric intake

- Overweight and obesity may increase risk of cancer

Takeaway Message

- Don't be a slave to the numbers. Carbohydrate and sugars are only one part of a diet.

- Account for all foods and beverages consumed and assess how they fit within a total healthy eating pattern.

- Select an eating pattern that meets nutrient needs over time at an appropriate calorie level

Takeaway Message

It's important to look at your whole lifestyle to make sure you are promoting wellness and the best quality of life

Healthy Lifestyle Goals

- Maintain a healthy weight

- Adopt a physically active lifestyle

- Consume a healthy diet with emphasis on plant sources

- Drink alcohol in moderation, if at all