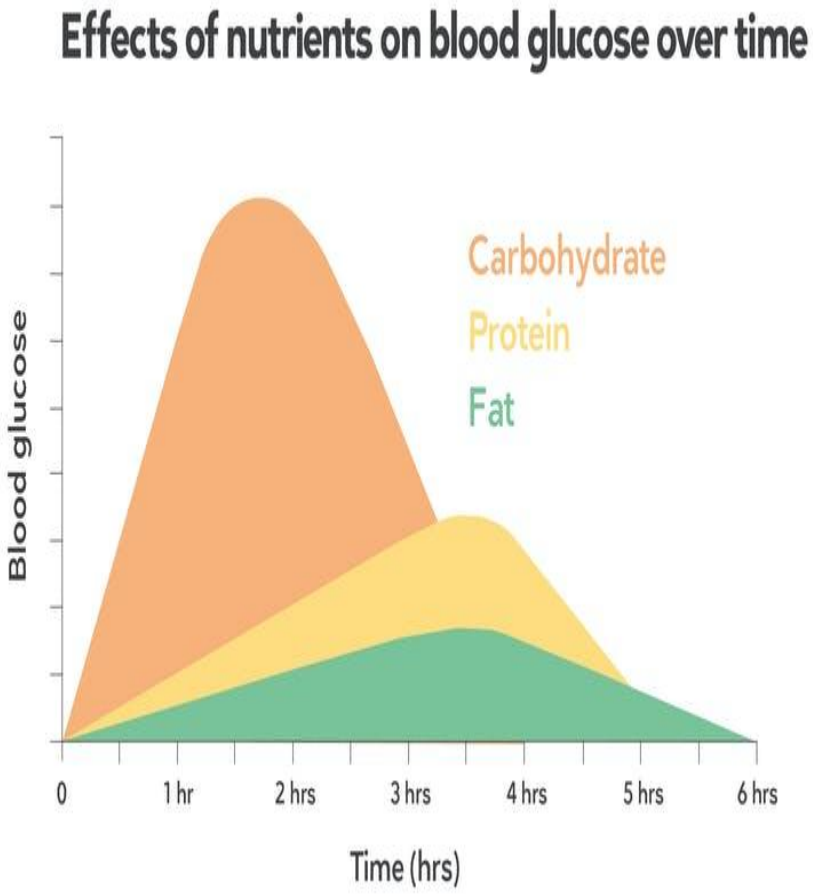
Glycemic index and Glycemic load

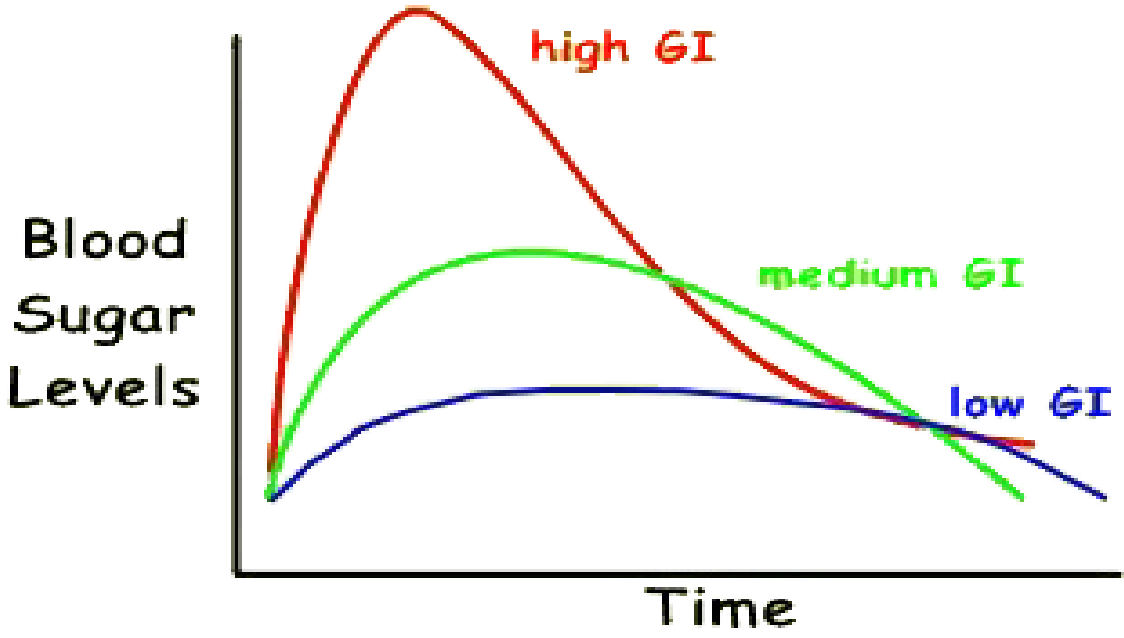
Dr. Burhan A. Salih

Lecturer

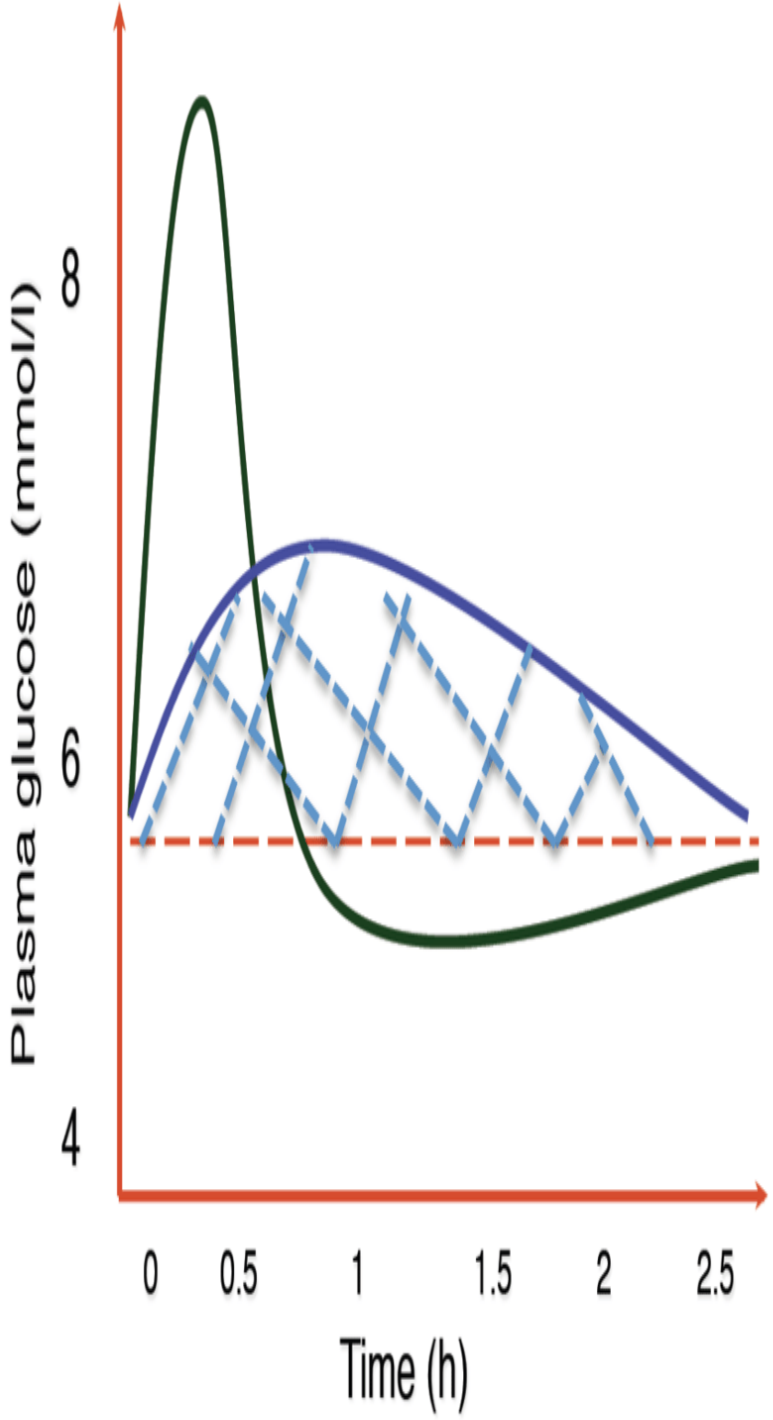
- The glycemic index (GI): is a measure of the blood glucose-raising potential of the carbohydrate content of a food compared to a reference food (generally pure glucose).



- Carbohydrate-containing foods can be classified relative to pure glucose (GI=100) as:
- high- (≥70)
- moderate- (56-69)
- low-GI (≤55)



- Consumption of high-GI foods causes a sharp increase in postprandial blood glucose concentration that declines rapidly
- Consumption of low-GI foods results in a lower blood glucose concentration that declines gradually.



- **The glycemic load (GL):** is obtained by multiplying the quality of carbohydrate in a given food (GI) by the amount of carbohydrate in a serving of that food.

$$\text{Glycemic Load} = \frac{\text{Carbohydrate content (g)} \times \text{Glycemic index}}{100}$$

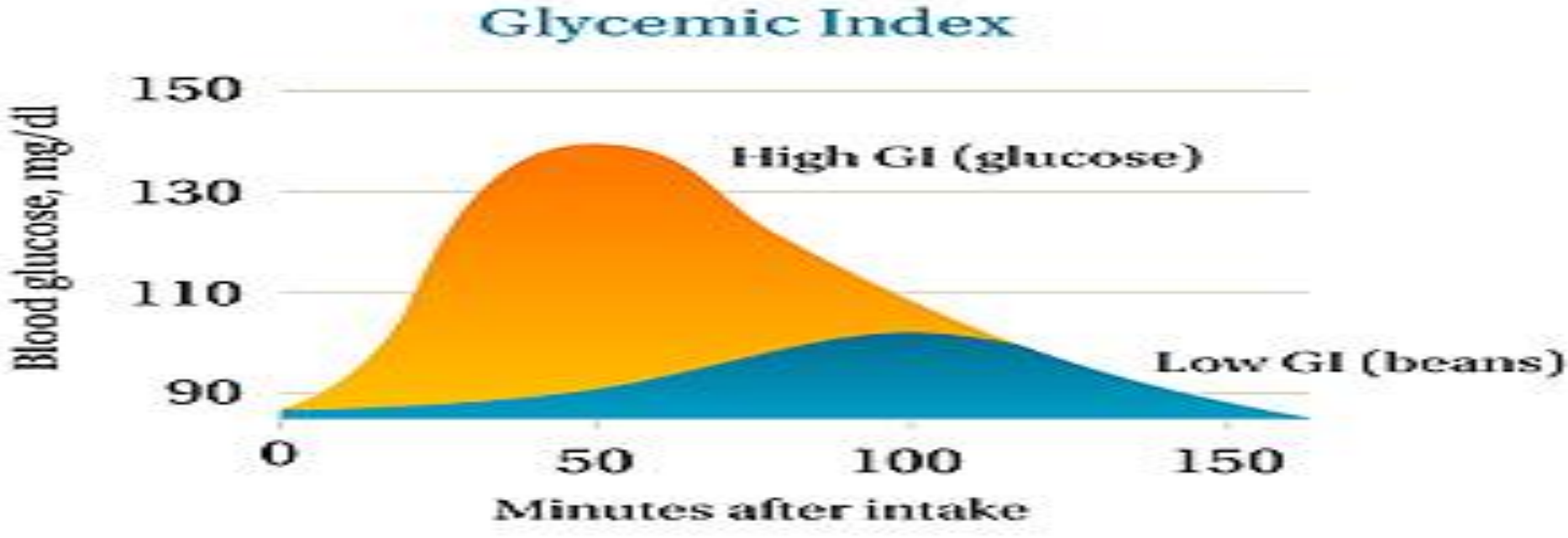
The carbohydrate content may apply to an individual food or the sum of all foods in a meal, or even in a day

Dividing by 100 returns the glycemic index to a ratio, rather than a percent

- Prospective cohort studies found high-GI or -GL diets to be associated with a higher risk of adverse health outcomes, including type 2 diabetes mellitus and cardiovascular disease.

Measuring the glycemic index of foods

- To determine the glycemic index (GI) of a food, healthy volunteers are typically given a test food that provides 50 grams (g) of carbohydrate and a control food (white, wheat bread or pure glucose) that provides the same amount of carbohydrate, on different days



- Several dietary intervention studies found that low-GI/GL diets were as effective as conventional, low-fat diets in reducing body weight. Both types of diets resulted in beneficial effects on metabolic markers associated with the risk of type 2 diabetes mellitus and cardiovascular disease.

- Lowering dietary GL can be achieved by increasing the consumption of whole grains, nuts, legumes, fruit, and non-starchy vegetables, and decreasing intakes of moderate- and high-GI foods like potatoes, white rice, white bread, and sugary foods.