





CARBOHYDRATE COUNTING

Carbohydrate counting is used frequently as an alternative to a meal plan for people with diabetes. It is especially handy for those who are taking multiple daily injections (MDI) and for those using an insulin pump. In these types of insulin delivery, an insulin-to-carbohydrate ratio ("carb ratio") is used to calculate the dosage of insulin for each meal or snack. For example, a person with an insulin-to-carbohydrate ratio of 1-to-10 would take 5 units of rapid-acting insulin to cover a meal containing 50 g (grams) of carbs, in addition to their basal or long-acting insulin.

Simple carbohydrate counting is not too difficult if you are already familiar with the Canadian Diabetes Association's *Beyond the Basics* food choices. In carbohydrate counting, only the starch, fruit, other sugar and milk choices are considered. The amount of carbohydrate in protein/meat, fat/oil and vegetable/extra choices is not significant.

| | | |
|---|-----------------|------------|
|  | 1 Starch Choice | 15 g carbs |
|  | 1 Fruit Choice | 15 g carbs |
|  | 1 Sugar Choice | 15 g carbs |
|  | 1 Milk Choice | 15 g carbs |

Therefore, for a meal consisting of 4 starch, 3 fruit, 1 milk, 3 protein and 2 fat/oil choices (using *Beyond the Basics*), the total carbohydrate would be $[(4 \times 15 \text{ g}) + (3 \times 15 \text{ g}) + (1 \times 15 \text{ g})] = 120 \text{ g}$.

| Nutrition Facts | |
|-------------------------|---------------|
| Per 1 cup (264g) | |
| Amount | % Daily Value |
| Calories 260 | |
| Fat 13g | 20% |
| Saturated Fat 3g | |
| + Trans Fat 2g | 25% |
| Cholesterol 30mg | |
| Sodium 660mg | 28% |
| Carbohydrate 35g | 10% |
| Fibre 4g | 16% |
| Sugars 5g | |
| Protein 5g | |
| Vitamin A 4% | Vitamin C 2% |
| Calcium 15% | Iron 4% |

When reading food labels, the carbohydrate content can be figured out by **subtracting all** the grams of fibre from the total grams of carbohydrate, as fibre does not contribute much to the blood sugar rise after a meal. As an example, for the food label at the left, the total amount of carbohydrate in a 1-cup portion is 35 g, but there are 4 g of fibre, so the total carbohydrate content that needs to be counted in insulin dosing is $[35 \text{ g} - 4 \text{ g}] = 31 \text{ g}$. As well, you can **subtract all** of the "sugar alcohols" (e.g. sorbitol and mannitol) in a food, as these generally do not raise the blood glucose level as much as other sugars. It is recommended not to eat more than 10 g of sugar alcohols a day, to prevent their side effect of abdominal pain, bloating, and diarrhea.

It is important to remember that, even though only the carbohydrate content of each meal is counted, you should not ignore the amounts of protein and particularly fat in the diet. The total caloric intake for the day and the quality of the carbohydrate (e.g. soda pop vs. whole-grain bread) in the meal should not be overlooked. The bottom line is that good nutrition requires attention to all of these!

Are you an expert? Check out our [Carb Counting Quiz](#) handout!