CARBOHYDRATES

Learning outcomes

You will learn

- Different carbohydrates (carbs) are, and which foods are high in carbs
- How most carbohydrates end up as glucose and the main function of glucose.
- Differing requirements for carbs for the general population and for low carb dietary approaches.
- Difference between good quality, wholesome carb foods vs simple refined carbohydrate foods; 'quality over quantity'.
- Practical ways to include healthful carbohydrate foods in meals and snacks.

Introduction

Carbohydrates, proteins and fats are the three macronutrients (macros). Together, they constitute 95% or more of the (dry) weight of the human diet.

Sugars and starches are the carbohydrates we digest, absorb and use for energy. Dietary fibre is mainly carbs, too, but we cannot digest it.

Sugars

The main sugars in the diet are Sucrose, Glucose and Fructose.

- **Sucrose** is regular table sugar; it is a 'double' molecule of glucose+fructose units (50/50).On average, about 20% of calories in the modern diet come from sucrose.
- **Glucose** is found alone in some fruits, but we get most of it from starch (see below). Glucose is the universal fuel that all our cells use to run the body, including brain activity and muscle contraction. We can release energy more rapidly from glucose than from fats and proteins
- **Fructose** is abundant in fruits and fruit juices, and is the sweetest sugar. Fructose cannot be used by the body in the same way as glucose. It can cause health problem if consumed in large amounts.

Starches

Starches in all foods are simply long strings of glucose molecules; our digestion separates them into glucose units before we absorb them.

> Carbs provide 4 kcal of energy per gram. For example, 1 teaspoon of sugar (about 4 grams) provides about 16 kcals of energy (4 x 4).