



Macronutrients Explained

How does energy get into your body?

Energy in

A *kilojoule (kJ)* is the international unit of measure for energy.

In the context of diet, kilojoules (or calories) are used to measure the potential energy in food and drinks. The amount of energy you consume depends on the quantity and type of macronutrient elements in your food.

All three of the macronutrients – *Carbohydrates (Carbs)*, *Proteins* and *Fats* – are sources of food energy, however their biochemical profiles are different. Also, the foods that sit within these three groups are very diverse in terms of nutritional quality. For example: carrots and fairy floss are both Carbs but carrots bring in energy, dietary fibre, vitamins and minerals (micronutrients), while fairy floss only brings in energy.

It is important to eat foods from ALL the macronutrient groups, but you have to get the dietary ‘mix’ right to function at your best.

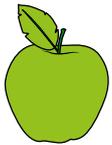
Food density

Alcohol is **NOT** a macronutrient but it is a source of high-density energy

WEIGHT MACRONUTRIENT [SOURCE]	EACH GRAM OF MACRONUTRIENT				
	CARBOHYDRATE		PROTEIN	ALCOHOL	FAT
ENERGY MOLECULE	FRUCTOSE	GLUCOSE	AMINO ACID	FATTY ACID	FATTY ACID
KILOJOULES	15.6KJ	16KJ	17KJ	29KJ	37KJ
DENSITY	LOW			HIGH	

Dietitians talk about food in terms of its *density*. Density is determined by the amount of kilojoules per gram of each macronutrient. It is good to be aware of food density, however the kilojoule count is the **least valuable factor** when making smart dietary choices. The nutritional quality of food is much more important. For example: nuts and butter are high-density foods but they make a valuable contribution to a healthy diet.





An **apple** is a Carb. It is a low-density wholefood with natural sugar, dietary fibre and micronutrients (150g = **380kj**).

Apple pie is a processed ‘hybrid’ food (2 or more macronutrients).

Along with the apple, it contains butter, added table sugar and flour (150g = **1540kj**).



The high-density ingredients in the pie increase the kilojoule count to **four times** that of an apple. Apple has fibre and nutrients and the butter is a healthy edible fat that supports essential metabolic processes. Unfortunately, the added sugar and refined grains (flour) add a large quantity of ‘empty’ (non-nutritive) kilojoules.

Giving up carbs

Babies begin life on a diet of breast milk or formula that contains a perfect combination of Carbs (lactose for brain and body energy), Proteins (building blocks of life), Fats (cell/nerve function) and micronutrients.

As children grow, the quantity of food will change but the winning nutritional spectrum of macro and micronutrients must be maintained to ensure healthy mental and physical development into adulthood.



Whole fruits and vegetables are Carbs and the cornerstone of a healthy diet, so going without Carbs is not a sensible option. When people say they are ‘giving up Carbs’, they usually mean they are cutting down on refined starchy foods such as bread, pasta, potatoes and pastries – which is a great decision!

It is important not to exclude entire macronutrient groups as a way to control energy intake (aka lose weight). Instead, try to make wise choices about the source of your energy by favouring fresh wholefoods over processed.

The invisible carbohydrate

The unsung hero in this story is *dietary fibre*, which comes from digesting insoluble plant matter from fruits, vegetables, legumes, grains and nuts. Eating foods with fibre slows down digestion, keeps your hunger at bay, cleans out your gut and keeps toxic waste products moving on through!

Fibre is only effective if you consume **plenty of water**. Even mild dehydration can cause an intestinal traffic jam that makes you feel bloated and unwell.



When choosing Carbs, unprocessed wholefoods with natural sugars and fibre are a daily essential.

