

Macronutrients



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Macronutrients and their functions, as well as the best food sources

There are so many myths about nutrients and food that it is sometimes hard to distinguish what's true and what's not. Do you understand the difference between a nutrient and a whole food? Nutrient is the building blocks of whole foods and has very specific functions. In this pamphlet you will get an overview on the truths and functions of macronutrients (*carbohydrates, fats and proteins*). The useful pamphlet will also guide you on the best food sources of these macronutrients to buy and even advise on the best value for money products.

What are macronutrients?

- It is the building blocks of whole foods and other biologically active constituents that are essential for the growth and development of our bodies and the maintenance of its functions.
- Each nutrient has functions and is needed in various quantities. The quantities or nutritional requirements differ between groups of people, and between individuals. These differences are related to an individual's age, sex, height, level of activity and health status.
- The classes of macronutrients are **carbohydrates, proteins, lipids** (*fats and oils*). Carbohydrates, proteins and lipids are macronutrients needed by the body in large quantities.

Carbohydrates ~ Make starchy foods part of most meals

Rich sources of carbohydrates are starchy foods such as maize meal, cereals, samp, bread, rice, pasta, potatoes and sweet potato. Other sources of carbohydrates include foods such as fruit, vegetables, milk and nuts to a lesser degree. These foods are our main source of energy, and should be consumed with most meals. It is important to choose unrefined starchy foods which are high in fibre since these increase

satiety, supports healthy bowel functioning and lower the risk of developing diseases such as obesity and heart disease. Source of vitamins and minerals: primarily provide complex carbohydrates, riboflavin, thiamine, niacin, iron and folate. Whole grains are particularly rich in magnesium, zinc, and fibre.

Tips

Carbohydrates are not fattening. It will only cause weight gain if one's intake is much less than one's activity level.

Give preference to whole wheat and unrefined cereal products, e.g. high fibre cereals and use brown rice, whole-wheat pasta, lentils or samp instead of rice.

Protein ~ Fish, chicken, lean meat or eggs could be eaten daily and have milk, maas or yoghurt every day

Rich sources of protein are meat, eggs, legumes and milk and dairy products. Proteins primary function is the growth, repair and maintenance of body tissue. The body requires new protein every day in order to keep the body tissues healthy. In times of inadequate energy intake (*either carbohydrate or lipids*), proteins can also provide energy. Proteins consist of amino acid chains. All of the essential amino acids are available from animal protein sources, while not all amino acids are available from plant proteins. Proteins also provide certain vitamins and minerals such as thiamine, niacin, cobalamin, vitamin D, phosphorus, iron, zinc and iodine.

Tips

Small portions of these foods can be eaten daily, but need not be eaten daily. Animal-based foods are higher in fat (*saturated fat*) and we tend to eat more thereof than we need to. Try to include more plant protein sources, eggs, dairy and fatty fish (*e.g. snoek, sardines, pilchards, mackerel, and salmon*) and less red meat.

Milk is not fattening. Aim to eat or drink at least 2 cups of milk, maas or yogurt per day. Skim or low fat is better. It has all the protein and calcium, but less fat.

Fats ~ Use fat sparingly; choose vegetable oils rather than hard fats

Dietary fat is an essential nutrient and source of energy required for many functions in the body such as growth, development and protection of internal organs. Fat is the most concentrated source of energy in the diet, and provides 37 kJ per gram compared to 17 kJ per gram from either carbohydrates or protein and 29 kJ per gram from alcohol. Dietary fats supply essential fatty acids, are a source of vitamins A, D, E and are needed for the absorption of vitamins A, D, E and K (called “fat soluble” vitamins). The three main types of fat is saturated, unsaturated and trans fat. High intake of saturated and trans fat are known to increase the risk of heart disease.



For more information on healthy living kindly contact
Nutrition Information Centre Stellenbosch University (Nicus)
 on 021 933 1408 or send an email to nicus@sun.ac.za

Tips

Protein foods such as meat and dairy also contain fat. We only need to add just very small amounts of fat to the diet to make it palatable.

Fat intake should be limited, especially saturated- and trans fats (*animal fats, full cream dairy products, chocolate, coconut, hard margarine, full cream products, baked goods for e.g. pies and cookies and palm oils e.g. coffee creamers and artificial cream*). Rather include more mono-unsaturated fats in limited amounts in your diet (*e.g. use canola oil or olive oil instead of sunflower oil, spread avocado or peanut butter instead of margarine on bread*) and polyunsaturated fat than saturated fat. Always use all types of fat in moderation! Cook foods without adding fat.

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Let's Shop: Meat, fish, chicken, legumes, eggs, dairy

Load your trolley with these healthy choices	Buy these products only on special occasions	Best buys if your budget is restricted
Meat		
Lean lamb-, beef-, and pork, liver, kidney.	Polonies, Vienna's and sausages are not healthy. Rather buy beans, eggs, peanut butter or lentils.	Pork and organ meat (<i>Replace meat with beans, legumes, soya mince, eggs</i>). Mix meat with beans or soya e.g. minced meat with added soya/beans. Avoid buying “cheap” meat that consists mainly of fat and bones.
Chicken, Game, Eggs		
Fresh chicken eggs (<i>avoid claims of free range or organic</i>) – these are expensive. Unprocessed chicken, turkey, ostrich or game. Chicken livers.	Processed meat such as chicken patties, Vienna's, nuggets and sticks. Smoked chicken or tinned chicken. Fried chicken or chicken prepared or cooked with the skin.	Frozen bulk packs of chicken and chicken livers. Replace chicken with beans, legumes, soya mince or eggs.
Fish		
Any type of fish especially moderate to fatty fish (<i>e.g. Snoek, tuna, mackerel, cob, anchovies, haddock, salmon, trout, and sardines</i>).	Fried fish. Processed fish such as fish cakes, fish fingers and crumbed fish.	Tinned fish is the most affordable.
Milk and Dairy		
Skimmed milk and -powder, low fat buttermilk, low fat yogurt and low fat or fat free cottage cheese. The following cheeses can be used in moderate amounts: Ricotta, Mozzarella, Feta, soft goat's cheese, low fat cheese and low fat cheese spread.	Full cream milk and -powder, Ideal milk and condensed milk. Milk mixtures and coffee creamers. Ice cream, sorbet and full cream cheese (<i>e.g. cream cheese, Cheddar, Gouda, Edam, Tussers, Blue cheese, hard goat's cheese, Cheshire, Emmenthal and Parmesan</i>).	Skimmed milk and -powder. Buttermilk and maas.

Let's Shop: Breads, cereals, rice, pastas, sweets and snacks

Load your trolley with these healthy choices	Buy these products only on special occasions	Best buys if your budget is restricted
Breads		
Low GI Breads and rolls (<i>brown/whole wheat</i>), brown pita, rye bread, pumpernickel bread, seed loaf.	Refined breads (<i>white</i>), garlic bread, croissants, sweet muffins, waffles, bran muffins, hot-cross buns.	Standard brown bread is cheaper than white bread, and much cheaper than special breads and rolls. Brown bread meal – bake your own bread.
Grain Products		
Brown rice, pastas, WHOLE GRAINS - wheat, oats, barley, millet, rye, bulgur buckwheat, millet, quinoa, sago, semolina, tapioca, samp.	Any grain products cooked with sugar or fat. All kind of processed starches e.g.: flavoured rice, pasta and sauce, canned pasta in sauce. Refined flours – cake flour, cake mixes, white bread flour, self-raising flour, flour mixes (<i>pancake mix, score mix etc.</i>)	Samp, maize meal, pasta (<i>Macaroni, spaghetti</i>), mielie rice. Use mostly maize rice and samp and use more expensive products such as rice pasta less often.
Cereals/Porridges		
Oats, mealie meal, maltabela, Magua, low fat whole wheat breakfast cereals (<i>≤3g fat per 100g</i>)	Ready-to-eat cereals such as whole grain flakes, ready to eat oats or maize meal or porridge.	Fortified maize meal, maize meal is the cheapest kind of porridge. Maltabela or oats porridge cost 3 times as much. Instant cereals are even more expensive.
Crackers and Snacks		
Whole wheat crackers Popcorn Rice cakes	Butter crackers, pretzels, potato crisps, sweets and confectionary (<i>hard boiled, chocolates, biscuits, nougat, cakes, tarts, energy bars, breakfast bars, biscuits, pastries, pies, granola, scones, rusks</i>).	These are expensive and should not be included in a restricted budget.
Starchy Vegetables		
Potatoes, sweet potatoes, corn, pumpkin, butternut, peas.	French fries (<i>slap chips</i>), other starchy vegetables cooked with sugar and fat.	Buy pumpkin in season and potatoes and sweet potatoes when prices are low.
Legumes		
All kinds of dried legumes e.g.: pearl barley, green split peas, kidney beans, whole lentils, butter beans. Canned beans in tomato sauce.	Any legume (<i>pulses</i>) cooked with sugar or fat.	Dried beans, soup mix, split peas, lentils.

Let's shop: Fats, spreads, oils, nuts

Load small amounts of these healthy fats in your trolley	Buy these products only on special occasions	Best buys if your budget is restricted
Canola margarine and -oil. Olive oil, olives, nuts and avocado. Reduced oil mayonnaise or salad dressing or cream. Peanut butter. Poli-unsaturated margarine and sunflower oil.	Butter Cream Confectionary: cakes, tarts, pies Chocolate Fried food	Sunflower oil, canola oil, the most affordable tub of soft margarine or use peanut butter as a spread