

## BUTTER

Butter is the concentrated form of milk's fat content. According to official regulations, butter contains at least 82% fat and at most, 16% water. Butter is produced by churning the cream portion of milk. This operation can be carried out after the cream has been ripened (light fermentation).

Butter is produced either raw (made exclusively from raw, non-pasteurized cream) or pasteurized (made from pasteurized cream).

There are several butter categories. They are differentiated according to the added salt level: salted butter: more than 3% salt content; semi-salted butter: 0.5 to 3% salt content; sweet butter: no salt added.

The colour of butter varies from pale to dark yellow. It depends on the food of the cows, which differs according to season, climate and soil. Its intensity depends on the pigment content (carotene and chlorophyll) and on the fodder consumed by the animal.

In nutrition, along with oils, butter is classified in the family of fat. With 82% fat content, butter is a very good source of energy : 1 butter knob (10 G) yields about 75 kcal \*. It also brings: various fatty acids\*\* (of which butyric gives flavour, and ruminic acid, contains CLA with its potential anti-carcinogenic properties); phospholipids\*\*\*; considerable quantities of vitamin A (which plays a part in vision mechanisms, skin and mucous membranes protection, resistance to infections etc), vitamin D (which has an essential role in calcium metabolism and bone growth) and to a lesser extent, vitamin E (an antioxidant). From an organoleptic point of view, butter diffuses many flavours (its own, but also those of other foods that it is able to capture and re-diffuse) and is therefore responsible for food flavour, consistency and taste.

\* 1g of lipids yields 9 kcal. Lipids are stored in fat tissues and represent the main reserve of body energy (this reserve of energy is of particular interest during prolonged physical exercise). Outside of their energy role, lipids have a structural role (cellular membranes and nerve tissues) as well as a functional one (enzymatic reactions, steroid hormones production, prostaglandins and leucotrienes and liposoluble vitamins transfer).

\*\* Dairy fat contains more than 400 different fatty acids (FA) of which an important proportion is saturated fat (65 to 70%); an interesting concentration of mono-unsaturated fat content (27 to 33%, acid oleic primarily) and a relatively low poly-unsaturated content (3.5 to 5%). Also noteworthy is its high content of short chain saturated fatty acid (10%) which is quickly digested, and of myristic fatty acid (9 to 12% of total FA); an important content of CLA (isomers of linoleic acid (0.2 to 3%) and in particular of ruminic acid whose beneficial properties ( regarding cancer, diabetes and atherosclerosis) are being studied. Butter is one of the richest sources of CLA (6mg /g of total fat content).

\*\*\*Phospholipids (sphingomyelins, lecithins, cephalins ....) are complex lipids. They are quantitatively minor constituents of dairy fat, which play an essential role in the structure of membranes and in cellular regulation. Certain animal studies show a beneficial role (sphingomyelins) in colon cancer and hypercholesterolemia.