



| Animal foods                                           |
|--------------------------------------------------------|
| Rich in water → low calories                           |
| High Na <sup>+</sup> in eggs and milk                  |
| K <sup>+</sup> is the majority                         |
| Additives are forbidden except in sausages and seafood |
| Vit D in eggs, oily fishes and milk                    |
| Sausages can be made with or without heat              |
| Nitrites block Fe oxidation                            |
| Antinutrient in raw egg white                          |
| Most complete: eggs and milk                           |
| Nutrient rich: viscera                                 |



| Food           | Milk & Dairy                                                    | Meat & Organs                                                           | Fish & Seafood                                                         | Eggs                                                                |
|----------------|-----------------------------------------------------------------|-------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------|
| Classification | Immediate consumption: Natural, sanitised and certified         | White & Red fibers. Myo (deoxi, oxi, meta) & Fe                         | Fresh, frozen, low salted, high salted, smoked                         | 0 - organic, 1 - free-range, 2- cage-free and 3 - cage              |
|                | Preserved milks: dried or heat-treated                          | Animal, parts, conservation (fresh, refrigerated, frozen...)            | Fresh, frozen, dehydrated or lyophilised, cooked                       | Shell, white and yolk   A or B   S, M, L, XL                        |
|                | Special milks: skimmed, lactose-free, enriched, fermented       | Rigor mortis, PSE & DFD → maturation                                    | No to little Rigor Mortis                                              | Fresh, refrigerated, preserved, defective, damaged                  |
|                |                                                                 |                                                                         |                                                                        |                                                                     |
| Consumption    | 70L milk & 35kg by-products                                     | 46kg                                                                    | 24kg   Fish to seafood 2:1                                             | 9,7kg                                                               |
| Composition:   |                                                                 |                                                                         |                                                                        |                                                                     |
| Water          | 87%                                                             | 60-80%                                                                  | 70-80%   more on seafood. Microbiology instability                     | 74% → 87%   50%                                                     |
| Fats           | 3-5%   C16:0, C18:0, SCFA, C18:1, Phospholipids, Unsaponifiable | 2-20%   Extracellular (subcutaneous), Intermuscular and Intramuscular   | <1-16%   TG 98%(25-75), P-Lipids 1,5%, Unsaponifiable (Cho 50mg)       | 11% → 0,2%   32%   C18:0 & Essentials 60%, P-lipids, Cho 500mg      |
| Carbs          | 4-6%   All Lactose                                              | 0,5-1-5%   Meat quality and glycogen content                            | 0-1%   Glycogen → Short Alkaline Rigor Mortis                          | 0,5% → 0,7%   0,3%   Free glucose and glucoproteins                 |
| Fiber          | -                                                               | -                                                                       | -                                                                      | -                                                                   |
| Proteins       | 3-4%   Caseins (α, β, κ) > Whey proteins (Albumins & Globulins) | 16-20%   myofibrillar, sarcoplasmic, connective. Creatine and free aa's | 16-22%   Similar to meat, they lack some aa's. NPNS (creatine, amines) | 13% → 11%   16%   Highest Quality. Albumins, lipoproteins           |
| Vitamins       | Group B and Vitamin A & D                                       | Group B and Vitamin A & D                                               | Group B and Vitamin A & D in oily fishes                               | Group B and all the fat soluble vitamins A, D, E, K                 |
| Minerals       | P, Ca, K, Na, Cl, Mg, Zn                                        | P > K > Na > Mg > Ca > Fe                                               | K > P > Na = Cl > Ca > Mg > Fe > Zn > Cu > I                           | P, K, Na, S > Fe, Zn, Cu, Se, I                                     |
|                |                                                                 |                                                                         |                                                                        |                                                                     |
| By-products    | Evaporated → concentrated → condensed(sugar)/powdered           | Cured: Chorizo(chopped), cured ham(whole), Not treated: hamburger       | Surimi, caviar, fishmeal and omega-3 fish oil                          | Liquids, Dried: lyophilised, dried or desiccated, Frozen and Cooked |
|                | Yoghurt, kefir, kumiss   Cream, Butter and Cheese               | Heated: cooked ham/turkey breast, mortadella, cooked sausages           |                                                                        |                                                                     |

| Fats & Oils                                                               |
|---------------------------------------------------------------------------|
| Industry uses non-natural fats: refining, hydrogenation and fractionation |
| Oleic > Linoleic > Linolenic                                              |
| pomace and olive oil are very similar                                     |
| Animal fat > vegetable fat                                                |
| Oils rich in Oleic: Olive, canola, rapeseed and sunflower                 |



| Food           | Fats                                                                            | Oils                                                                      |
|----------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------|
| Classification | At 20°C Fats are solid                                                          | At 20°C Oils are liquid                                                   |
|                | Animal: Lard and tallow   Vegetable: Coconut, palm oil and butter, cocoa butter | Animal: fish oil   Vegetable: oilseed and olive (pomace) oil              |
|                | Hydrogenated, processed and rendered fats                                       |                                                                           |
|                |                                                                                 |                                                                           |
| Consumption    | 12kg                                                                            | 13,3L   8,9L Olive oil                                                    |
| Composition:   |                                                                                 |                                                                           |
| Water          | 0%                                                                              | 0%                                                                        |
|                |                                                                                 | 100%   Insaturated fats Olive oil: Oleic > Palmitic > Linoleic > Estearic |
| Fats           | 100%   Saturated fats are the majority                                          |                                                                           |
| Carbs          | 0%                                                                              | 0%                                                                        |
| Fiber          | -                                                                               | -                                                                         |
| Proteins       | 0%                                                                              | 0%                                                                        |
| Vitamins       | Some fat-soluble vitamins if not refined                                        | Some fat-soluble vitamins if not refined                                  |
| Minerals       | Maybe some minerals if not refined                                              | Maybe some minerals if not refined                                        |
|                |                                                                                 |                                                                           |
| By-products    | Refining, Hydrogenation, Interesterification and Fractionation                  |                                                                           |