Animal foods

- Rich in water→ low calories
- High Na^+ in eggs and milk
- K^+ is the majority
- Additives are forbidden except in sausages and seafish
- 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% | Higest 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 20ºC Fats are solid	At 20ºC 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%**
Fats	100% | Saturated fats are the majority	100% |↑Insaturated fats Olive oil: Oleic > Palmitic > Linoleic > Estearic
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	

Grains, Legumes and nuts

When hydrated they're similar to animal products in terms of kcal

Nuts 25g/day not too much ↑fats

More poliinsaturated are walnuts

Starch in grains > in legumes

↑Starch rice ↓starch Oats

White Flour is done without outer layers: pericarp and germ (Refined)

bread & pasta difference is fermentation and hydratation

bread products can have ↑sugars and ↑fats

Soy is a legume with similar properties to nuts (no starch, ↑fats, ↑protein)

Food	Grains	Legumes	Nuts
Classification	Rice, oats, barley, rye, maize, wheat and buckwheat	lentil, chickpea, lupin, bean, pea, broad bean, soya bean, peanut, carob	Fruits with less than 50% of water
	Hull, pericarp, seed (endosperm and germ)	funicle, testa: cotyledon (macros) and radicle & plumule (micros)	Almond, walnut, cashew, hazelnut, pistachio, peanut...
	Amaranth, quinoa, chia, canihua, buckwheat	↑Fat or ↑Starch | Extra, Category I, Category II	pine nuts, macadamia nuts, Brazil nuts, sunflower seeds
Consumption	Bread 31kg, Pasta 4kg, Rice 3,8kg, Pastries 5,8kg	3,9kg	3,8kg
Composition:			
Water	**10-14%** | Water content as dried	**8-12% | Water content as dried**	**< 10%**
Fats	**2-3% Oats 6%** |Insat>Sat. lecithin,unsaponifiable	1-3% Soy 20% Chickpea 5% | TG, P-lipids and unsaponifiable	40-70% | Insat > Sat. Phytosterols 25mg, P-lipids
Carbs	**65-85%** | Starch: amylose 25% and amylopectin 75%	60-85% | 45-60% Starch (not in soy), <3% Sugars	5-22% | Starch 2-4%, Sugar 5-10%
Fiber	**2-16%** | Cellulose, β-glucans, inulin and resistant starch	10-25% | Cellulose and oligosaccharides	**3-10%**
Proteins	8-12% | Endosperm ↓Quality. Lysine deficiency. Gluten	17-25% Soy 35% | Methionine deficiency. Albumins, Globulins, Glutelins	15-25% | Contain a lot of arginine (vasodilator =↓CD)
Vitamins	Group B and Vitamin E & provitamin A	Group B and Vitamin E & provitamin A	High in Vitamin E and Vitamin B9 mainly
Minerals	K > P > Mg > Ca > Na > Fe > Zn > Mn > Cu >Se	K, P, Mg, Ca > Fe, Zn, Mn, Cu, Se... Antinutrients like Phytic acid	K, Mg, Ca > Cu, Se... Antinutrients
By-products	Flour, semolina, bran, wheat germ. Bread and Pasta	Peeled legumes, legume purees and legume flours	Peanuts are legumes but are consumed as nuts
	Baked goods: Yeast, chemical, air and partially-grown	Soy: oil, beverage, tofu, flour, protein, sprouts, sauce, tempeh & miso	Same for Sunflower seeds

Veggies, tubers and fruits

Very similar with ↑H2O in all of them

They change in sugar and starch contents

Very important for Vitamins and Minerals

Tubers having starch, contain proteins. No starch → Nitrogen compounds

Sulphuric compounds and oxalates are some antinutrients of veggies

Vitamin K is an anticoagulant and it's a problem for some people

Food	Veggies	Tubers	Fruits
Classification	Greens, vegetables and legumes	Potato, sweet potato, yucca, yam and tiger nuts	Drupe, knob, berry, peponid, hesperidium, polydrupe, syconium and sorosis
	Bulbs, cabbage, fruits, leaves, inflorescence, green legumes, peponids, roots and young stems	Fresh (ordinary, quality, peeled)	Pulpy, dry and oleaginous. Fresh, dried, dehydrated or frozen
	Fresh, dried, dehydrated or frozen. Extra, Category I, II and III	Imported (old or new), introduced or local	Extra, Category I, II, III. Climacteric or not. Tropical or not
Consumption	64kg	32kg	99kg and 8L as juices
Composition:			
Water	**85-95%**	**77-82% | 70-75%**	85-95% | 70-75% in bananas, figs and guava
Fats	< 0,2-0,3% | Present in seeds	**< 0,5%**	**< 0,5% | 15-30% Avocado and olive, 30-40% Coconut.**
Carbs	3-10% | < 2% Starch, < 5% Sugar and the rest are Oligosaccharides	**13-18% | Starch > Sugars | 20-25%**	**5-18% | More in bananas and figs**
Fiber	1-3% | Classic fiber: Insoluble > Soluble	1,5-2% | 3-4,5%	1-3% | Soluble > Insoluble
Proteins	As Nitrogen compounds 1-5% | Non proteinic aa's and amines. Proteins 35-80%	**1,5-2,5%**	As Nitrogen compounds 0,5-1,5% | Proteins 35-75%
Vitamins	Group B, ↑Vit C, Vit K, E and provitamin A	Group B, Vit C and provitamin A | Less Vit C	Group B, ↑Vit C, Vit K, E and provitamin A
Minerals	K, P, Mg, Ca > Fe, Zn, Mn, Cu... Antinutrients like Oxalates	K, P, Mg, Ca > Fe, Zn, Mn, Cu | More Fe 2mg	K, P, Mg > Fe, Zn, Mn
By-products	Dried, frozen, fermented, canned, in vinegar, salted, juices, powdered, puree	Preserved, dehydrated, frozen	In syrup, compotes, purees, candied fruit, glazed fruit, marmalade, jam & jelly
	Pickles, sauerkraut and extracts	Fried, flours, starch additive, granules and flakes	Fresh juices, natural juices, preserved juices and nectars. Tomato, juice, concentrated, sauce and ketchup

Water, alcohol and beverages

Natural mineral water and spring ↑quality

Fermented or distillates alchohol

Food	Water	Beverages	Wine	Beer	Distilled beverages
Classification	water for human consumption	Prepared drinking water with additives	Mono or multi-variety. Dry, semi-dry, semi-sweet, sweet	Barley malt, yeast, hops and water	Naturals: simple spirit 30-80º, distilled alcohol 80-96º, rectified alcohol (chemicals) >96º
	Bottled water: natural mineral water, spring water,	May contain CO2, sugar, caffeine or quinine	Quality wine or not. CO2: still or sparkling.	cereal beer, extra, special, low-alcohol, non-alcoholic, dark beer	Spirit drinks: compound spirits >30º, liqueurs >15º and aperitifs without cuvée
	prepared drinking water and packaged public water supplies.	seltzer water, flavoured, soda, soft drinks	White, red, rosé, claret. Young, Crianza, Reserva, Gran reserva	Lager (<10ºC -10D), Ale (<20ºC-5D) or Spontaneous fermentation	
Consumption	67L	39L	10L	23L	0,7L
Composition:					
Water	close to 100%	Max 94% as they need to have 6% of "juice"	**85%**	**94-94%**	it depends on the type of distilled beverage
Fats	-	-	-	-	
Carbs	-	Some may contain sugar > 6%	Alcohol 9-15% | Sugar 0,1-2 g/L Red > White	Alcohol 5% | Sugar 4%	Alcohol >30%
Fiber	-	-	-	-	
Proteins	-	-	-	-	
Vitamins	-	-	Some vitamins	Some vitamins	Very low to no vitamins
Minerals	Some minerals (composition table only in natural mineral)	Some minerals depending on the water	Some minerals	Some minerals	Very low minerals
By-products		Soft drinks: fruit, extract, flavoured or mixed	May contain additives: SO2		

Sweeteners

Honey and sugar differenciate in water content mainly and sugar profile

Honey is sweeter than sugar

Food	Sugar	Honey
Classification	raw, refined, molasses	Nectar to honey. Raw or pasteurised honey
	icing and caramelised sugar,	Blossom or honeydew honey. Direct or industrial
	invert sugar, syrups and lactose	Comb honey, honeycomb pieces, drained, centrifuged, pressed.
Consumption	3,6kg	0,4kg
Composition:		
Water	it depends... close to 0%	**< 20%**
Fats		-
Carbs	Close to 100% sugar	85% | 32% Glucose, 39% Fructose, <5% Sucrose
Fiber		-
Proteins		-
Vitamins	Very low to no vitamins	Some vitamins
Minerals	Very low minerals	Some minerals
By-products	candies, confectionery, chewing gum,	Nougat
	sugared almonds, marzipan and nougat	

Stimulants

xanthines from purine-derived alkaloids: Caffeine, Theobromine and Theophylline

150-200 mg/kg a day of caffeine

Tea is ↑[caffeine] compared to coffee and cocoa. Theine = caffeine

Cocoa and by-products: beans Criollo, Forastero and Trinitario. Cholesterol

Cocoa nibs, cocoa mass, cocoa butter, cocoa cake, cocoa powder (sugared)

Chocolate, milk chocolate, hot chocolate and white chocolate.

Coffee: coffee beans→seeds isolated and roasted. F 13%, C 30%, P 9%, H_2O 2%

Natural roast, roasted, blended, instant/soluble and decaffeinated coffees (methylene chloride, ethyl acetate, water or CO_2 **before roasting**)

Coffee substitutes: Roasted chicory, malt and barley. All of them without xanthines

Tea: *Thea* leaves→treated and dried.

Green tea (not fermented, less caffeine),
Black Tea (fermented, more caffeine),
Decaffeinated Tea,
Soluble tea extract (evaporated tea).
Oolong tea (between Green/Black) and Rooibos (no xanthines)

Flavonoids with antioxidant properties

Condiments and spices

Salt: NaCl for food use. Table salt can have additives (anti-caking agents)

Sea salt, refined salt (coarse), table salt (fine) and special salts (iodised, fluorinated, iodine-fluorinated, nitritated)

Vinegar: double fermentation (alcoholic & acetic)

Wine vinegar (only wine) 5% of acetic acid
Balsamic vinegar (grape must = ↑sugar 20%) others (apple cider vinegar).
Other classification: sweet, semi-sweet, aged

Spices: dried leaves or seeds used to correct the taste

They have some characteristics like additives as preservatives and antioxidants but little action

Prepared condiments and seasoning: mix of spices for a specific use
Spice substitutes: only for cinnamon, black or white peppers and cloves

Sauces: mix of treated ingredients used to eat alongside food

Ketchup: tomato concentrate with sugar and additives
Mayonnaise: vegetable oils and eggs
Mustard: mustard seed with vinegar
"Fried" tomato, salad dressing, marinade, tomato sauce, hot curry sauce and hot ketchup