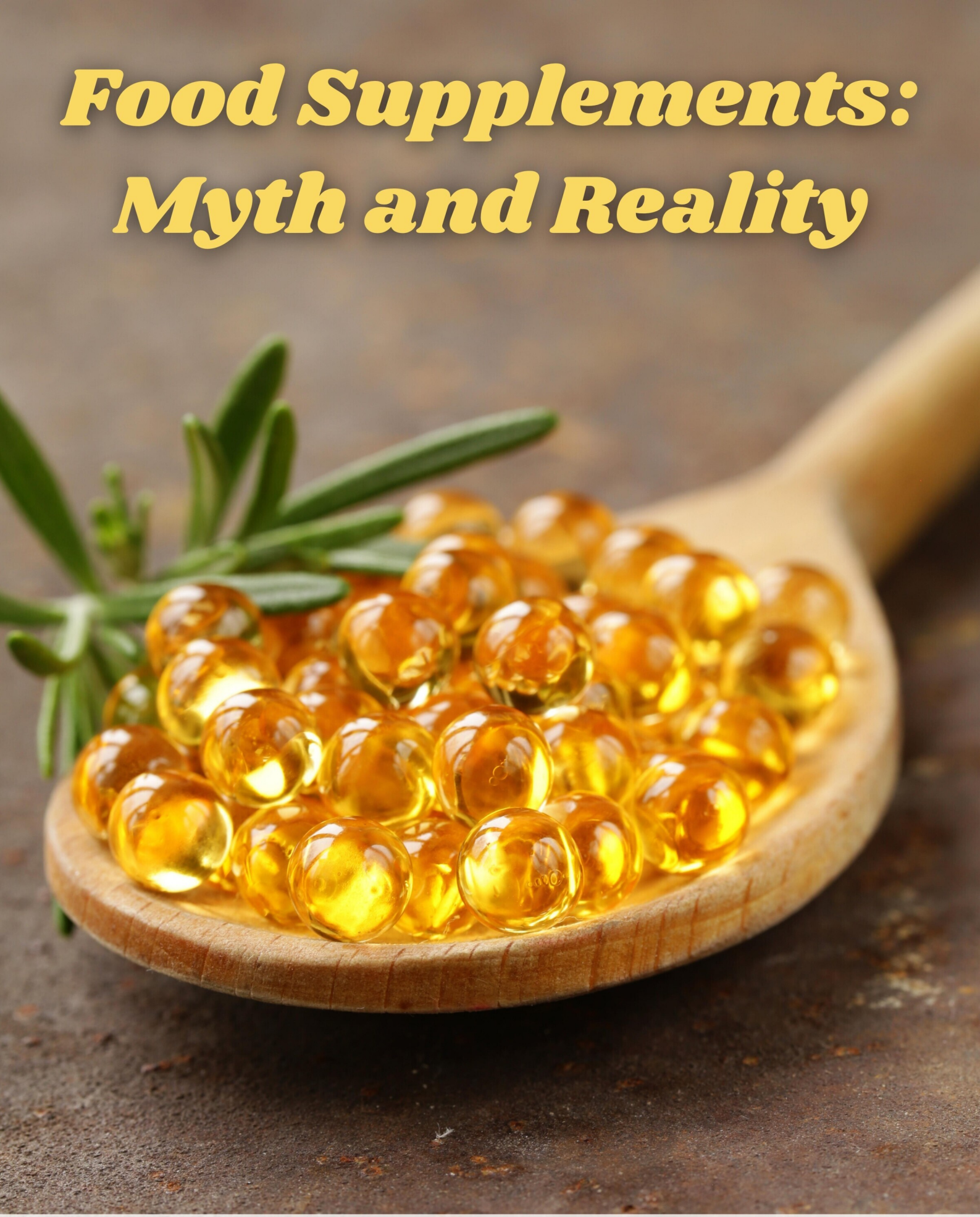
Food Supplements: Myth and Reality



Holistic Natural Health Experts

Table Of Contents

Introduction	2
Origins of supplements	3
Galenics	6
Excipients and additives	12
Packaging and marketing	15
Scientific information	19
Evolution of supplements	22
Therapeutic information	24
Laws and regulations	25
Composition of supplements	28
Vitamins	29
Minerals and trace elements	32
Antioxidants	35
Enzymes	36
Amino acids	37
Quality of supplements	40
Improved bioavailability	47
Indications for supplements	50
Self-medication, autocompletion and DIY	53
Basic autocompletion	59
Conclusion	64

Introduction

Definition

Food supplements are concentrated formulations of active constituents. Some of these active constituents serve a nutritional or physiological function in the human body and must be ingested or taken as supplements. Their deficiency may promote or cause disease. However, dietary supplements are not regarded drugs.

Source

These active constituents are derived from natural plant, animal, or mineral substances, but they are also obtainable through total or partial synthesis. They are not always identical to natural molecules during synthesis.Function

Their aim is to maintain or improve health by supplementing or, in some cases, replacing dietary intake.

Galenics

Although some vitamin- and mineral-based dietary supplements can be administered by infusion (under medical supervision), or others such as natural hormones by the cutaneous route in cream form, almost all dietary supplements are taken orally via the following different forms:

- liquids
- sprays
- tablets and pills
- capsules
- powders
- liposomes
- sucking tablets

For the sake of simplicity, from now on we'll refer to dietary supplements as "supplements", to avoid tedious repetition.

Origins of supplements

In the beginning

It is likely that humans have been supplementing their diets with food, plant, and mineral extracts for as long as we can remember.

In fact, it is impossible to separate food supplements and natural medicine, as males have accessed both simultaneously.

Humans have always sought to increase their nutritional intake to promote growth, fertility, strength, the fight against infectious diseases, and general health across all cultures and traditions.

The migration of various human populations to colder, arid, and mountainous regions has exacerbated the difficulty of daily life.

Therefore, it was necessary to manage each land's unique characteristics, develop an adapted agriculture, and seek solutions for survival and prosperity.

Some communities have placed a high value on quality of life and, as a result, have devised (and continue to use) practices such as:

- Utilizing fermentation to concentrate probiotics and vitamins.
- Extraction of juice and oil (to concentrate antioxidants or specific fatty acids).
- Germination of seeds (to add vitamins and other beneficial molecules to the diet).

Despite the fact that this food optimization has been known for millennia, it is fair to say that food abundance has been largely reserved for the elite.

For the exploited, on the other hand, there is no healthful diet, no supplements, and no treatment, but there are numerous diseases linked to nutritional deficiencies and bacterial, toxic, and poisonous contamination of their food.

In the 20th century

Massive urbanization has further separated the human population from natural food production regions. Shopping at the supermarket has supplanted purchasing from a farm or cultivating one's own garden.

Industrialized food consumption has become the norm. Gradually, agricultural knowledge and dietary enrichment through natural supplements were lost.

Since the 1950s, the development of industrial agriculture utilizing chemical products (pesticides, herbicides, fungicides, etc.) has destroyed soil life and eradicated billions of microorganisms, thereby diminishing the richness and variety of micronutrients (vitamins, minerals, antioxidants, and phytonutrients) in our food.

Abstract

Three kinds of evidence point toward declines of some nutrients in fruits and vegetables available in the United States and the United Kingdom: 1) early studies of fertilization found inverse relationships between crop yield and mineral concentrations-the widely cited "dilution effect"; 2) three recent studies of historical food composition data found apparent median declines of 5% to 40% or more in some minerals in groups of vegetables and perhaps fruits; one study also evaluated vitamins and protein with similar results; and 3) recent side-by-side plantings of low- and high-yield cultivars of broccoli and grains found consistently negative correlations between yield and concentrations of minerals and protein, a newly recognized genetic dilution effect.

Declining Fruit and Vegetable Nutrient Composition: What Is the Evidence? Author: Donald R. Davis

https://journals.ashs.org/hortsci/view/journals/hortsci/44/1/article-p15.xml

Fruits and vegetables sold in supermarkets have gradually lost their flavor and nutrients, despite retaining a visual resemblance to the nutrient-dense, flavorful foods of yesteryear.

Other losses result from the use of pesticides on plants: loss of bioavailability. This means that some of their micronutrients cannot be assimilated by our bodies, and their lack of defense stimuli against natural aggressors (climate, insects, microorganisms) prevents them from producing phytonutrients such as salvestrols, of which resveratrol is the most well-known.

Salvestrols are a new class of natural compounds that have a pharmacological definition rather than a chemical definition. They are defined by the action of the metabolites produced when they are metabolised by the CYP1B1 enzyme in cancer cells. Simply put, salvestrols are food-based compounds that are metabolised by CYP1B1 to produce metabolites that are anticancer agents. These anticancer agents suppress tumour growth by killing the cancer cells. Salvestrols provide an explanation of the link between diet and cancer and between fruit and vegetable consumption and lower cancer incidence.

https://www.amazon.com/Salvestrols-Natures-Defence-Against-Linking/dp/1477554114

Today

To mitigate for this loss of micronutrients in industrial foods, the modern supplement industry emerged.

From the 1980s onward, it became increasingly common for pharmacies and health food stores to stock vitamins and other supplements in capsule form.

At first, only a dozen products were available.

In just forty years, the supplement industry has exploded into a multi-hundred-billion-dollar market with thousands of products promised miracles.

Obviously, only a few hundred of these thousands of products are genuinely beneficial to health.

The scope of our offer

In addition to vitamins and minerals, the spectrum of supplements has expanded to include plants, foods, and superfoods, blurring the distinction between nutrition, phytotherapy, and supplements. As a result, sorting out useful, less useful or pointless supplements becomes more complex.

Remember a fundamental rule:

No supplement can replace a plant-based, organic diet.

While agricultural soils are being depleted and irresponsibly poisoned, the temptation to purchase health with pills is great. This reckless haste will only result in increased disease and frailty.

Therefore, the purpose of this book is to provide the keys to comprehending what supplements are and what to anticipate from them.

Galenics

Galenics is the design and production of the numerous forms of supplement administration. The public's enthusiasm for supplements is directly attributable to the significant progress made in this discipline over the past three decades.

In fact, supplement laboratories communicate exhaustively on this topic, praising the ease of daily application of their products. What could be easier than ingesting capsules or tablets to compensate for deficiencies?

Galenic diversity makes it easier to take supplements, particularly when they have an unpleasant flavor!

Capsules

Depending on their dimension, capsules can be used to package any powdered supplement up to 1 gram in weight. Common dosages range between 200 mg and 500 mg.

Currently, the preponderance of capsules are vegetable-based, although gelatin-based capsules still exist. Magnesium stearate is the most common additive found in capsules; it functions as a lubricant and makes capsule filling easier for machines. Avoid using this additive whenever feasible.

Although very convenient, capsules are not airtight, which is why anti-moisture sachets are included in the majority of supplement shipments. Anti-moisture containers prevent ingredients from deteriorating when exposed to air.

Capsules eliminate the supplement's flavor, which is an undeniable benefit. Magnesium, for example, has a taste that most people find extremely unpleasant; placing it in capsules makes it simpler to consume.

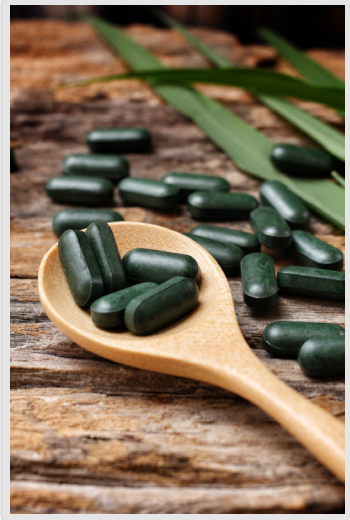
If the supplement tastes excellent or if a person does not wish to swallow a capsule, the capsule can be opened and the contents consumed directly under the tongue or diluted in a little water.

However, the inclusion of magnesium stearate to many supplements facilitates capsule filling. Magnesium stearate is an anti-caking and emulsifying agent. This significantly reduces labor and maximizes profits. Rarely is the amount of magnesium stearate used specified.

This excipient derived from stearic acid and magnesium has no nutritional value, as stearic acid can be synthesized by the body and is abundant in healthful diets (vegetable fats).

Magnesium stearate from vegetables in small quantities poses no problem, and depending on the supplement, it may be impossible to locate a source that does not contain magnesium stearate. However, the only indications we can discover are "vegetable magnesium stearate" with no additional information regarding its quality.

Tablets



While capsules can be filled without additives (if the manufacturer so chooses), additives are generally required for tablets.

These range from harmless additives such as glycerin or cellulose, to more nutritionally useless ones such as vegetable magnesium stearate.

Numerous other additives, such as magnesium stearate of animal origin, silica dioxide, specific sugars, titanium dioxide, talcum powder, artificial colorings, and sweeteners (very common in sucking tablets), are frequently employed.

The most prevalent instance is effervescent vitamin C, such as UPSA vitamin C (France):

> VITAMINE C UPSA EFFERVESCENTE 1000 mg, comprimé effervescent contient du jaune orangé S (E110), du benzoate de sodium (E211), du fructose, du glucose, du saccharose et du sodium.
>
> Ce médicament contient un agent colorant azoïque (E110, jaune orangé S) et peut provoquer des réactions allergiques.
>
> Ce médicament contient 50 mg de benzoate de sodium (E211) par comprimé effervescent.
>
> VITAMINE C UPSA EFFERVESCENTE 1000 mg
>
> https://base-donnees-publique.medicaments.gouv.fr/affichageDoc.php?specid=63509669&typedoc

What justification is there for incorporating a toxic azoic coloring agent into a vitamin C tablet? It is without validity... despite this, it is prevalent practice. This explains the adverse effects mentioned in the instructions, which were caused by the product's toxic additives!

Some individuals enjoy effervescent tablets despite their lack of utility.

Clearly, the inferior the quality of the supplement and the more it should be banned, the more unnatural, problematic, and numerous the additives.

The only permissible tablets are those obtained through natural compression of the ingredients and/or the addition of natural ingredients, such as this vitamin C, for example:

> Vitamin C (as ascorbic acid) 1,000 mg
>
> Microcrystalline cellulose, vegetable cellulose, vegetable stearic acid, silica, vegetable glycerin.
>
> VITAMIN C 1000 MG TABLETS, Solgar
>
> https://www.solgar.com/products/vitamin-c-1000-mg-tablets/

In this instance of vitamin C tablets, there are no harmful or hazardous additives.

Sucking tablets or lozenges

This galenic form is uncommon and is typically reserved for supplements that must operate in the mouth or throat, such as zinc combined with vitamin C and echinacea. Certain vitamins such as biotin, B12, neurotransmitters such as gaba, and even hormones such as melatonin are also available as lozenges. Obviously, this list is not comprehensive.

The use of flavorings to conceal the taste of substances is the primary issue. The majority of laboratories list "natural flavors" as an ingredient in their lozenges.

"Natural strawberry flavor" does not indicate that the flavor is extracted from strawberries; rather, it indicates that the flavor is derived from natural elements. It can also originate from wood chips and other fruits. Occasionally, there is so much sugar that adding flavoring is unnecessary.

Powders

In theory, powders containing only natural constituents are optimal. They can be diluted with any natural liquid or incorporated into a smoothie, if the flavor permits.

Sadly, many powdered supplements contain artificial flavors, carbohydrates, and other additives.

Here's a lamentable example:

Vitamin C, Phosphorus, Chloride, Sodium

Amino Acid Blend:

L-Taurine, CarnoSyn® Beta-alanine, L-Glutamine, L-Arginine, L-Leucine, L-Citrulline, L-Isoleucine, L-Valine, L-Tyrosine, L-Histidine HCL, L-Lysine HCL, L-Phenylalanine, L-Threonine, L-Methionine

** L-Carnitine L-Tartrate, INNOBIO® (supplying 60% Conjugated Linoleic Acid), Green Tea (Camellia sinensis) (leaf) Extract (std. to 50% EGCG), Green Coffee (Coffea robusta) (bean) Extract (std. to 50% Chlorogenic acids)

** InnovaTea® Natural Caffeine 98% from Tea (Camellia sinensis), Theobromine

Citric acid, natural & artificial flavors, maltodextrin, sucralose, fiber blend (cellulose gum, xanthan gum, carrageenan), acesulfame potassium, FD&C red #40, FD&C blue #1.

RSP Nutrition, AminoLean, 5 g Amino Acids + Anytime Energy, Blackberry Pomegranate, 23.7 oz (672 g), RSP Nutrition

https://ch.iherb.com/pr/rsp-nutrition-aminolean-5-g-amino-acids-anytime-energy-blackberry-pomegranate-23-7-oz-672-g/106538

This product is intended to provide essential amino acids and energy-boosting ingredients, so there's not much to complain about in terms of its ingredient composition.

However, the additives make it difficult to believe what is written:

- artificial flavors
- artificial sweetener (acesulfame potassium)
- two toxic dyes (FD&C red #40 and FD&C blue #1)

How is this even possible? How many individuals will consume the recommended daily dose of 79 grams and for how many months or years?

Here's a reverse example where the composition is perfectly suited to a healthy supplement:

Protein: 20g multisource plant-based protein with 9 essential amino acids

Vitamins: 50% DV of 10 vitamins from plant-based food ingredients

Greens: USDA Organic certified greens including kale & spinach

Omega-3 Ala: Essential fatty acids from flaxseed

Probiotics: 2 billion CFUs Bacillus coagulans

Pea protein†, agave inulin powder†, golden flaxseed powder†, vega one veggies and fruits blend† (carrot juice powder†, spinach powder†, acerola cherry juice powder†, chard powder†, kale powder†, lettuce powder†, pomegranate juice powder†, blueberry powder†, acai powder†), pea starch†, natural flavors, spirulina†, chia seed powder†, maca root powder†, quinoa sprouts† (sprouted in water with vitamins b1, b2, b3, b5, b6 and b7), probiotics (bacillus coagulans), sunflower seed protein†, pumpkin seed protein†, sacha inchi powder†, stevia leaf extract†, bromelain,mushroom powder†, xanthan gum.

†Organic.

Vega, One All-In-One Shake, French Vanilla, 1 lb 8.30 oz (689 g), Vega

https://ch.iherb.com/pr/vega-one-all-in-one-shake-french-vanilla-1-lb-8-30-oz-689-g/81571

This supplement contains organic foods and nutrients in addition to probiotics, has a more comprehensive composition than its predecessor, and does not contain any toxic additives.

The purpose of this comparison is to describe the composition of ingredients and additives found in powder supplements commonly available on the market.

Liquids and sprays

For minors and those unable to swallow, liquids and sprays are an undeniable advantage; however, some supplements are also available as sublingual tablets.

In contrast, bottles containing liquids and sprays are susceptible to breaking, leaking if not adequately sealed, and heat damage.

This makes them suitable for domestic use.

Again, entirely unnecessary additives can cause complications.

Consider this example:

Vitamin B-6 (as pyridoxine HCl) 4.5 mg 264%

Melatonin 4.5 mg

Deionized water, vegetable glycerine, natural orange flavor, lecithin (soy), lauric arginate, and potassium benzoate.

Sleep Science® Melatonin NutraSpray™, Sourcenaturals

https://www.sourcenaturals.com/products/GP1405

This mouth spray contains vitamin B6 in its traditional form, which is slightly less active than the pyridoxal 5 phosphate (p-5-p) form. It contains soy lecithin without specifying non-GMO and antimicrobial lauric arginate, both of which are contraindicated for use over the medium to long term in the absence of an oral infection.

It also contains a natural orange flavor, although we cannot be certain of its origin because "natural" merely refers to a substance that occurs in nature. Finally, it contains potassium benzoate as a preservative.

In conclusion, we can say that this spray is average but acceptable for occasional use, despite the fact that there are supplements of superior quality available. If you consult a holistic natural health expert with supplementation training, he or she will be able to give you advice.

Liposomes

The liposomal form, a true technological innovation, facilitates the absorption of numerous non-lipid supplements by the digestive mucosa.

Phospholipids are natural lipids with a hydrophilic (water-loving) end and a hydrophobic (water-repelling) end.

Their double-layer structure enables them to expose their hydrophilic portion to the liquid environment. Our cell membranes are structured in this manner, willingly embracing contact with the aqueous medium both inside and outside the cell, while their phospholipid double-layer membrane is lipidic on the inside.

Therefore, liposomes are constructed on the same principle, enveloping water-soluble substances to allow them to traverse a lipid membrane. This ensures optimum absorption through the digestive tract and cellular penetration.

https://www.youtube.com/watch?v=KMfi11_JChM&t=50s

Take vitamin C, which is absorbed from the digestive tract through a sodium-dependent active transport mechanism and is therefore limited in quantity.

The liposomal form facilitates the absorption of several grams of vitamin C per day, which would be unfeasible with vitamin C powder. The only alternative would be intravenous administration.

Liposomal structures confer substantial advantages to the administration of specific supplements.

Obviously, it is essential to ensure that the supplement contains actual liposomal structures and not merely a mixture of lipids and the active ingredient, as is all too often the case with inexpensive supplements mislabeled "liposomal."

Excipients and additives

Excipients

With rare exceptions, excipients are still used in the production of medications. These are their definitions:

> Excipients are non-therapeutic elements that are used in the composition of a drug or in its manufacture. The function of the excipient is to improve the appearance or taste, to ensure preservation, to facilitate the formatting and administration of the drug.
>
> https://www.vidal.fr/medicaments/utilisation/prendre-traitement/excipients-effet-notoire.html

Thankfully, the supplement industry does not always require excipients, particularly detrimental ones.

Some, such as lanolin (sheep's wool oil), lactose, and aspartame, are not recommended.

The good news is that an increasing number of supplements are certified vegan, eliminating the use of excipients like lactose and lanolin.

The excipients impart stability, shape, solubility, and targeting properties to the supplement while being relatively inert to the human body.

Excipients are sometimes necessary

It is the responsibility of the healthcare professional to separate supplements and exclude those that contain unnecessary excipients, as some supplements require them.

Examples of beneficial excipients include:

- vegetable oils to enable fat-soluble vitamins such as vitamins E, A or D to be encapsulated (oleocapsules)
- binders such as acacia gum, fenugreek mucilage or simply cellulose
- mannitol, an excellent substitute for lactose
- rice extract as an anti-caking agent
- etc.

Additives

There is little distinction between excipients and additives; some healthcare professionals refer to all active substance additions as additives.

We presume that additives, which include colorants and flavorings, are generally unnecessary.

Recognizing toxic additives

A high-quality supplement never contains harmful additives. So you will find them primarily, but not exclusively, in inexpensive supplements.

The following list is not exhaustive:

Antioxidants :

- synthetic vitamin E (DL)
- BHT (Butylated hydroxytoluene)
- BHA (butylated hydroxyanisole)
- synthetic beta-carotene

Colorants :

- quinoline yellow (E 104)
- indigotine (E 132)
- orange aluminum lacquer (E110)
- carmoisine (E122)
- titanium dioxide

Flavours and sweeteners :

- saccharin
- cyclamate
- Acesulfame K
- vanillin

Other :

- polysorbate 80
- shellac
- polyvinylpyrrolidone (PVP)

Why do some supplements contain toxic additives?

Widespread use of toxic additives is prevalent in the pharmaceutical industry, which also produces supplements. The ethics of laboratories engaged in the production of healthful, natural supplements have nothing to do with the ethics of pharmaceutical laboratories.

Here's a concrete example:

The novanuit supplement from Sanofi is formulated with vitamin B6, melatonin, and three botanicals (passionflower, poppy, and lemon balm). It is not a supplement in the strictest sense (without phytotherapy), but it is sold as a supplement like thousands of other products.

Let's examine its additives with our remarks enclosed in brackets.

1) carriers and load agents:

- wheat maltodextrin, corn maltodextrin
- microcrystalline cellulose
- silicon dioxide

2) emulsifiers:

cross-linked sodium carboxymethylcellulose (not recommended)

3) coating agents:

- polyvinyl alcohol (not recommended)
- polyethylene glycols (not recommended)
- polysorbate 80 (not recommended)

4) anti-caking agents:

- talcum powder (not recommended)
- magnesium stearate

5) colorants:

- carmine (not recommended)
- coal

Included in "not recommended" are additives that are prohibited or toxic. When we do not provide any indication, it is because we are lacking information. For instance, is maltodextrin derived from corn, GMO wheat, or conventional wheat? Is magnesium stearate derived from plants or animals?

Due to the presence of extraneous additives in this product, we cannot recommend it.

Packaging and marketing

This is the area of supplement development where the most progress has been made. The recent history of supplements is dominated by their marketing history.

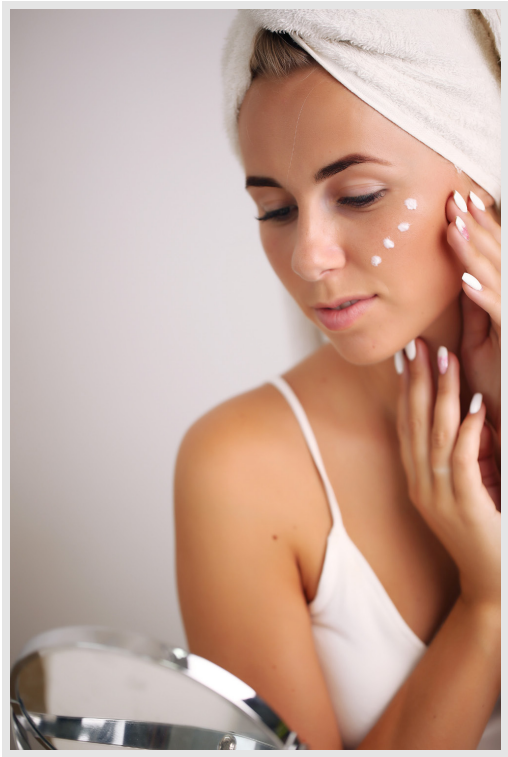
Today, some products arrive in packaging so luxurious that we feel bad throwing them away. The supplement industry promotes the fantasy of immortality.

It is also important to note that the cosmetics industry has begun to manufacture supplements. Similarly, the distinction between cosmetics and supplements is a delicate one.

Vitamins, minerals, collagen, hyaluronic acid, and other molecules with plumping properties are heavily marketed by beauty salons and top cosmetics companies.

However, quality is inconsistent and prices are exorbitant: you pay for the packaging and marketing, but so little for the supplement itself!

The cosmetics industry can also be criticized for its petrochemical roots, and the composition of many of its supplements contains undesirable synthetic ingredients and additives.



From a professional standpoint, packaging must satisfy two essential criteria:

- Not toxic
- Protect from light and humidity

Money should be spent on the product's composition, not its presentation. Consequently, it is not uncommon to discover vast price variations for the same supplement. Therefore, the counsel of a therapist who has no conflicts of interest with a specific laboratory is of the uttermost importance.

We cannot emphasize enough that marketing campaigns are not scientific information, or if scientific information is presented, it is frequently partial and biased.

Face treatments are an excellent example of this issue.

A simple Google search reveals a product for a modest price that offers a complex to be applied to the epidermis for 28 days... CHF 1,295!

Time Master Intensive Program, Valmont

Cure intensive anti-âge

28 jours pour 4 actions jeunesse. Cure essentielle cellulaire anti-âge globale : hydrate, tonifie, raffermit et stimule l'éclat. 14 x 3 ml

https://www.lamaisonvalmont.com/ch/fr/time-master-intensive-program-1.html

Examining the "marketing" composition of the 14 capsules of 3 ml each, totaling 42 ml, reveals the following :

Liposomal DNA intensely moisturizes, liposomal RNA stimulates cell regeneration and strengthens intercellular tissue, hyaluronic acid fills fine lines and delivers long-lasting hydration, elastin reviver improves elasticity, peptide cocktail fights wrinkles.

But in reality, the real composition, i.e. the list of ingredients, leaves one wondering:

INGREDIENTS : WATER (AQUA), GLYCERIN, BUTYLENE GLYCOL, CAPRYLIC/CAPRIC TRIGLYCERIDE, DIETHYLHEXYL CARBONATE, ALCOHOL, LECITHIN, ACETYL DIPEPTIDE-1 CETYL ESTER, CALCIUM DNA, CAPROOYL TETRAPEPTIDE-3, DECARBOXY CARNOSINE HCl, HYDROLYZED SOY PROTEIN, MAGNESIUM DNA, PALMITOYL TETRAPEPTIDE-7, PALMITOYL TRIPEPTIDE-1, PANTHENOL, PEUCEDANUM GRAVEOLENS (DILL) EXTRACT, RNA, SILANETRIOL, SODIUM DNA, SODIUM HYALURONATE, TOCOPHERYL ACETATE, UREA, AMMONIUM ACRYLOYLDIMETHYLTAURATE/VP COPOLYMER, CARBOMER, CELLULOSE GUM, CITRIC ACID, COCO-GLUCOSIDE, DEXTRAN, DICAPRYLYL ETHER, HYDROXYETHYLCELLULOSE, LAURETH-3, MICROCRYSTALLINE CELLULOSE, PENTYLENE GLYCOL, POTASSIUM PHOSPHATE, SODIUM ACRYLATES/C10-30 ALKYL ACRYLATE CROSSPOLYMER, SODIUM CARBOXYMETHYL BETA-GLUCAN, SODIUM LACTATE, XANTHAN GUM, ETHYLHEXYLGLYCERIN, PHENOXYETHANOL, POTASSIUM SORBATE, SORBIC ACID, FRAGRANCE (PARFUM), BENZYL BENZOATE, BUTYLPHENYL METHYLPROPIONAL, CINNAMYL ALCOHOL, CITRAL, CITRONELLOL, EUGENOL, GERANIOL, HEXYL CINNAMAL, HYDROXYISOHEXYL 3-CYCLOHEXENE CARBOXALDEHYDE, LIMONENE, LINALOOL.
AN3a.

https://www.parfumerie-en-ligne.com/anti-rides-et-fermete/21798-valmonttime-master-intensive-programtype-du-produit-la-cure-cellulaire-visage-valmon-7612017051093.html

This product contains a number of undesirable constituents, including butylphenyl methylpropional, hydroxyisohexyl 3-cyclohexene carboxaldehyde, phenoxyethanol, fragrance, etc.

In this example, price is unrelated to the quality of ingredients as we comprehend it in natural medicine.

For less privileged individuals seeking a skin cream that may not contain the same ingredients, but at least collagen, the following 114-gram tube is available for just CHF 12.

Mason Natural, Collagen Premium Skin Cream, Pear Scented, 4 oz (114 g)

https://ch.iherb.com/pr/mason-natural-collagen-premium-skin-cream-pear-scented-4-oz-114-g/71246

Unsurprisingly, this cream contains ingredients that are not recommended:

- phenoxyethanol
- triethanolamine
- chemical perfume (fragrance)

This example is intended to illustrate the marketing effect, which is unrelated to the quality of a supplement or its composition. Obviously, there will be no luxury packaging, and the composition will be less refined.

Let's consider another random example of a capsule supplement:

LYMA. The ultimate Supplement

https://lyma.life/supplement/

This supplement contains ten components: turmeric, vitamin D, cognizin (citicoline), vitamin K, beta-glucans, soluble keratin, levagen (the fatty acid palmitoylethanolamide, commonly known as PEA), ashwaganda, lycopene and saffron.

As is typical in the supplement industry, all constituents are patented, such as when a laboratory creates a more bioavailable form:

> KSM-66® Ashwagandha Cynatine® HNS Cognizin® Lycored Lycopene™ HydroCurc® Wellmune® Blend K2VITAL® DELTA Vita-algae D3™ Affron® Levagen®.
>
> https://lyma.life/supplement/

There is nothing extraordinary about these ingredients, and yet the price for a month's supplementation is 235 euros, along with a beautifully designed copper box containing 120 copper-plated (with what? mystery) capsules. Although they are no longer copper-plated... as they are not permitted by European law:

> We introduced the LYMA clear capsule to EU customers on 1st August 2022, in response to new European Commission legislation. As of 21st December we have replaced the LYMA copper capsule with LYMA clear capsules worldwide, part of our commitment to transparency and B-Corp membership.
>
> https://lyma.life/faqs/supplement/when-were-the-clear-capsules-introduced/

The monthly fee will amount to €175.

Will you get a full complement at that price? Of course not. Is it qualitatively unique? Of course not.

This supplement contains ten ingredients whose daily dose has been determined by the laboratory and must fit into four capsules. Therefore, you must select both the number and quantity of each ingredient, as the more ingredients a supplement contains, the more space it will require.

However, soluble keratin alone is insufficient for hair attractiveness, and the other ingredients are not directly related to hair health.

Let's see the difference with a special hair supplement:

NOW Foods, Solutions, Vegan Hair, Skin & Nails, 90 Veg Capsules

https://ch.iherb.com/pr/now-foods-solutions-vegan-hair-skin-nails-90-veg-capsules/86316

It is a multivitamin-mineral supplement that also contains horsetail, hyaluronic acid, and amino acids. The monthly supplement expenditure is CHF 15.

Let's examine another supplement with a distinct composition, as it contains collagen and soluble keratin (Cynatine®) and costs CHF 20 per month:

Life Extension, Hair, Skin & Nails, Collagen Plus Formula, 120 Tablets

https://ch.iherb.com/pr/life-extension-hair-skin-nails-collagen-plus-formula-120-tablets/90367

Consider saffron, an ingredient renowned for its mood-enhancing properties. It is not specified how much saffron is contained in a daily dose of Lyma capsules, but the typical dose is 15 mg.

The supplement listed below contains 28 mg per capsule of the same patented saffron extract (Affron®). The monthly cost is CHF 12 for one capsule per day.

California Gold Nutrition, Saffron Extract with Affron, 28 mg, 60 Veggie Capsules

https://ch.iherb.com/pr/california-gold-nutrition-saffron-extract-with-affron-28-mg-60-veggie-capsules/102196

How many common individuals can deconstruct and comprehend supplements in this manner? Extremely few.

We can go on with turmeric, ashwaganda, cognizin, lycopene, PEA, vitamin D and beta-glucans.

You'll find some ingredients in units and others in complexes, but for the same budget, you'll receive far more nutrients if you're advised by an expert supplement therapist as opposed to an advertisement.

Understand that marketing tells you what you want to hear, not the truth, because marketing serves the interests of the seller, not yours.

In contrast, an independent holistic natural health expert with no affiliations or conflicts of interest serves your best interests and can recommend the most cost-effective products.

Scientific information

Unfortunately, scientific information, which is crucial for the proper use of supplements, is not advancing as rapidly as marketing.

The public has limited access to the actual benefits that a supplement can provide to an organization.

Indeed, scientific information is susceptible to a variety of biases, which we will undoubtedly develop for the substances in question. In this way, you will gain a greater understanding of the false hopes that certain supplements can generate.

It is essential to realize that exploration and research are typically conducted by chemists, biochemists, biologists, and physicists, and rarely by natural therapists/doctors.

An anti-inflammatory action identified on a cell culture (in vitro) cannot be directly transposed to our organism because it does not account for multiple factors such as:

- pharmacokinetics (what our body does to the substance)
- pharmacodynamics (what the substance does to our body)
- the synergies required for this substance to be absorbed and active at the necessary dosage

Thus, it is difficult to deduce the action of a substance in our body (in vivo) from a single in vitro observation.

Historically, natural remedies have favored the use of whole plants and foods. Their behavior is the result of all of their molecules and more, as the whole is greater than the sum of its parts.

> « Le tout est plus grand que la somme des parties » énoncé par Aristote (384-322 av. J.-C.) mais aussi attribué à Ibn Sïna médecin philosophe, plus connu sous le nom d'Avicenne (980-1037) est un principe fondamental bien connu par les médecines naturelles.

This is not to say that attempting to administer and therefore comprehend how isolated substances function is an error, but it is a difficult and complex field to investigate.

Let's return to our supplements and use glutathione as an illustration of how they function.

Glutathione

Our cells produce glutathione, the most essential antioxidant in our bodies.

The abundance and brilliance of glutathione's scientific knowledge has earned it unprecedented publicity in medical, natural medicine, and supplement magazines.

Like many other molecules, its production declines with age or inadequate diet, so in theory it could be supplemented for all individuals.

Typically, glutathione is sold as a powder in capsules, but its absorbability is poor because it is partially destroyed in the stomach.

Selecting a high-quality liposomal or sublingual glutathione will enhance its assimilation. S-acetyl glutathione, a more stable variant of glutathione powder, has recently become available.

It is anticipated that a sufficient supply of glutathione precursors and the vitamins and minerals that support its metabolism, along with a healthy diet, will enable cells to produce more glutathione, which is proving to be the case in practice and will bring additional benefits.

Glycine, N-acetylcysteine, vitamin C, vitamin B6, vitamin B2 and selenium can increase glutathione levels either directly or indirectly.

In addition, it is essential to comprehend the importance of other antioxidants, such as vitamins C and E, in maintaining glutathione levels.

From a holistic standpoint, antioxidant supplementation should be as comprehensive as feasible and individualized to each individual's needs.

Astragaloside IV

Telomeres are DNA sequences at the ends of chromosomes that are intended to protect them from deterioration.

> In the laboratory, in Petri dishes, the introduction of telomerase into human cell cultures transforms otherwise lethal cells into immortal ones.
>
> As a result of these discoveries, a few small telomerase-activating molecules have been developed for use in the treatment of cellular aging. Some of these are extracted from Astragalus membranaceus.
>
> https://www.nutranews.org/fr--antiage--telomeres-telomerase-vieillissement-lastragaloside-iv-un-activateur-telomerase--1161

This discovery in a Petri dish (a simple round transparent dish with a lid) led to the telomeric theory of aging.

The longer the telomeres, the slower the aging of cells. In addition, once we discovered the enzyme that protects telomeres (telomerase), all we had to do was determine which molecules could stimulate this enzyme, and aging would be eliminated.

In Chinese medicine, "Huang qi", the Chinese term for astragalus membranaceus, has been regarded for millennia as a potent energy tonic. Therefore, it is not remarkable that researchers looked in this direction and discovered astragaloside IV in the astragalus plant's roots.

After tests on cell cultures and mice, these expensive supplements were promptly put on the market.

As far as adverse effects are concerned, it is generally accepted that none exist, whereas the positive effects on telomere lengthening in vivo appear to be much more variable. Indeed, it appears from observations of white blood cells that telomeres do not lengthen but rather diminish.

Cycloastragenol

As science advanced, it was discovered that it was not astragaloside IV that had an effect on telomeres, but rather a component of it, cycloastragenol, which is available in supplement form.

Indeed, intestinal absorption of astragaloside IV is low, so it is reasonable to presume that the majority of astragaloside IV capsules end up in the toilet.

Obviously, the price of cycloastragenol is quite high, and regardless of the laboratory, the prices are comparable when comparing the number of capsules to the milligrams per capsule.

https://anti-aging-labs.fr/anti-aging-shop/

It should also be noted that some substances, such as cycloastragenol, have dose-dependent actions, and the desired effect is not achieved by consuming the maximum dose.

This example demonstrates, once again, the significance of receiving guidance from a professional in the field.

Evolution of supplements

Never before have supplements sold so well.

Everyone is aware that they require something in addition to sustenance, and supplements are the most convenient solution.

In response to rising demand, the supply has expanded to include tens of thousands of products and thousands of laboratories.

Every month, new supplements are introduced that claim to be more effective, potent, and indispensable than their predecessors.

Frequently, the arguments for their superior efficacy are novel:

- individual substances
- molecular shapes
- substance combinations
- improvements in bioavailability

Isolated substances

As their name suggests, isolated substances are extracted from plants whose action and therapeutic use have been known for centuries.

So they are not novel! In addition, many clinical trials have been unsuccessful because the efficacy of an isolated substance is not equivalent to that of the whole plant.

However, isolated substances can be patented, particularly if they are extracted or prepared in a particular manner. Each isolated substance can then be sold as a supplement.

Molecular forms

Due to cost and technological possibilities, a supplement may initially be marketed in its inactive/synthetic form (often comprising 50% of the supplement) and then become available in its active/naturally-identical form a few months or years later. However, the dormant or ostensibly inactive form continues to be sold without a label indicating this.

Of course! Without comprehension, the consumer relies on the generic name and is consequently not always able to make the best decision.

Take alpha-lipoic acid, which is a potent antioxidant. The R form is produced naturally by the organism, while the S form is manufactured. These forms indicate the rotational direction of these molecules (R = rectus, S = sinister).

It is not possible to synthesize only the natural form of the molecule in the laboratory. In consequence, the vast majority of lipoic acid sold contains 50% of the natural form and 50% of the inactive synthetic form, which has no place in our bodies.

Most lipoic acid supplements contain both forms in equal amounts, which can be deceiving given that only half are active.

In conclusion, we believe it is of the utmost importance to choose only supplements containing the identical form as the natural one.

Substance combinations

The most widely recognized compounds are multivitamin complexes.

In any event, cramming as many vitamins and minerals as possible into a single pill is not indicative of product quality. In reality, this argument is a marketing ploy designed to increase consumer confidence rather than a therapeutic one.

Improvements in bioavailability

This is the most important aspect of supplement consumption. Prior to two decades ago, laboratories could sell virtually any substance without regard to bioavailability.

Increasingly informed consumers seek the most bioavailable form of a given supplement.

This topic will be expanded upon in the chapter titled "Improving Bioavailability."

Therapeutic information

Claims regarding the benefits of supplements are sometimes true, sometimes false, and very frequently incorrect.

In general, the information provided to the public about their properties has evolved into a significant marketing effort.

It is difficult for healthcare professionals to locate neutral, reliable clinical data on the subject.

In some nations, therapists and physicians can produce and distribute their own supplement line. The benefit of this is that the therapist can demand a higher level of quality than the majority-agreed standards (however, this can lead to a conflict of interest and a focus on supplements rather than phytotherapy, for instance).

The disadvantage is that the opposite may be true, and poor supplements may be sold based solely on the imagination of a few individuals who lack actual expertise.

Consider the United States, the supplement king: anyone can establish a laboratory and create a variety of supplements.

Consumers mistakenly believe the FDA regulates the quality of supplements, whereas its function is purely administrative.

We will elaborate on the topic of supplement quality in a separate chapter.

Returning to the therapeutic information, this is repeated without actual controls by the supplement-marketing laboratories.

Turmeric is a prime example, with a multitude of therapeutic claims.

The majority of these claims are attributable to turmeric's high bioavailability, which indicates that it enters the circulation in sufficient quantities. Other claims are associated with quantities that are impractical in practice.

When laboratories lack expertise in this area, they simply rehash information from other laboratories or wellness websites, leaving consumers with access to only theoretical data.

Laws and regulations

The codex alimentarius

The vast majority of supplements are not considered pharmaceuticals, but their market authorization varies significantly from country to country, ranging from a few dozen to hundreds of products.

Faced with such a wide variety of products, safety is the primary concern, but it's reassuring to know that the authorities in charge of regulating food substances, supplements, and medications do not examine the quality of supplements! They only ensure compliance with multinational corporations' regulations, particularly those of the Codex Alimentarius.

Under the guise of hygiene standards, this codex alimentarius seeks to eliminate as many natural products as possible, whether of dietary, complementary, or phytotherapeutic origin.

We have lost scores of plants marketed by small laboratories since its implementation. Due to the prohibitive administrative costs imposed by the codex, these laboratories have been compelled to close. Small farmers have ceased harvesting or cultivating plants that are no longer commercially viable.

If the codex is extremely harmful to herbal medicine and therefore to health, it is also harmful to food, as it decides which foods can be marketed and therefore consumed.

Clearly, the Codex restricts the variety and use of supplements and regulates their dosage. This unethical practice has contributed to a rise in the price of high-quality supplements, and as a result, it has encouraged the marketing of numerous mediocre and even hazardous supplements.

The codex is presented as a food safety regulation to safeguard consumer health, but it is actually a tool to promote trade and the profits of multinational corporations.

For the record, it was in November 1961 (and not in 1963) that the Codex Alimentarius was entrusted to the FAO and the WHO, two UN commissions strictly subordinated to the agrochemical and pharmaceutical multinationals. Let's remember that 1961 was not only the year of the first French nuclear tests but also the year of the creation of UPOV, of the CAP, of the OECD, the year of the launching of the pseudo "green revolutions" and the year of the reorganization of GNIS. The year 1961 was really a very good vintage for the Authorities.

Thanks to the Codex Alimentarius, the multinationals and their state lackeys could impose genetic chimeras, synthetic fertilizers and pesticides (herbicides, fungicides, insecticides, nematocides...) on the peoples of the whole planet. Thanks to the Codex Alimentarius, the multinationals and their state lackeys will now regulate medicinal plants and food supplements to benefit the industry, in general, and the pharmaceutical industry, in particular...

This entry was posted in Our paving stones in the pond on May 8, 2011 by Xochipelli.

https://blog.kokopelli-semences.fr/2011/05/la-coalition-des-clowns-psychopathes/
https://www.fao.org/3/w9114f/W9114f03.htm

The purpose of the Codex Alimentarius is to set standards for all food products and food supplements. The 27 member countries of the European Union (EU) are increasingly using the Codex to shape food regulations in accordance with European laws...

Already in 1996, the German delegation made a proposal that no plant, vitamin or mineral should be sold freely for preventive reasons and that food supplements should be classified as drugs. This proposal was validated but never applied because of numerous protests...

In July 2005, during the 28th session of the Codex Alimentarius Commission, the Guidelines for Vitamin and Mineral Food Supplements were adopted. This text does not aim to prohibit food supplements, but to impose certain information on their labeling such as minimum and maximum consumption of vitamins, as well as safety and efficacy standards for their manufacture.

The WHO added that these guidelines ensure that consumers receive health benefits, which is not obvious, as member countries can arbitrarily choose whether to classify food supplements as drugs or medicines.

Moreover, Codex serves the interests of the multinational pharmaceutical and food industry, as it has allowed banned pesticides to be put back on the market, and recommends that livestock be treated with antibiotics and growth hormone marketed by Monsanto...

It is obvious that it is impossible, both financially and temporally, to validate the legal diffusion of the thousands of medicinal species that are used throughout the world. However, this impossibility does not mean that these products should be completely eliminated.

The European Directive was adopted by the FAO, whereas it is the WHO that manages the Codex and its application. However, the European Directive has not yet established the maximum proportion of vitamins and minerals that these supplements may contain, nor when these restrictions will be applied...

"The Codex Alimentarius considers the interests of international trade to be far more important than the protection of consumer health. The proof is in the funding. Codex receives 86% of its budget from FAO ($7.2 million) and only 14% ($1.2 million) from WHO." Undeniably, it always puts economic interests, especially those of the pharmaceutical, chemical and genetic industries, before those of human health.

Thus, we must consider the Codex as a threat to natural food products and supplements that will not be totally banned but whose concentration of vitamins and minerals may be limited to very low dosages, therefore without any effect, by the European Union...

Scott Tips is an American lawyer and international specialist in the laws governing food and drugs. He is President and General Counsel of the National Health Federation (NHF), the world's oldest consumer health freedom organization, and represents his international clientele on several continents. He uses his unique experience to discuss not only the structure and operation of Codex, but the restriction of the quality and quantity of vitamins and minerals in today's food...

"As far as the European Union is concerned, I think its Food Supplements Directive has already "nailed the coffin" of many products. They are disappearing from the shelves of liberal countries that allowed them to be sold (such as the UK, Ireland, Holland and even Sweden).

SYLVIE SIMON, October 20

https://www.liberterre.fr/liberterres/codex/sylvie-simon02.html

Mixing genres

Since the 2000s, supplement manufacturers have increasingly incorporated phytotherapy into the composition of their products, without making therapeutic claims in order to adhere with regulations.

This evolution is a response to a marketing logic in the context of an expanding demand, all in a context where:

- regulations on medicinal plants are becoming increasingly absurd and financially unbearable
- therapists trained to a professional level are far too rare
- complaints from sufferers looking for a natural solution are on the

increase

Consequently, in order to "fly under the radar" of pervasive restrictions, modern supplements combine multiple categories of therapeutic approaches, sometimes with intelligence and sometimes with foolishness.

Composition of supplements

As we have seen, supplements are high-concentration active ingredient products.

These active constituents serve a nutritional or physiological purpose in the human body, and some of them must be obtained through food or supplements.

Theoretically, supplements contain these active constituents. However, the actuality is not quite so straightforward.

The subsequent issues arise:

- Can we extract every conceivable active ingredient?
- Can they be administered in capsule, tablet, or powder form, etc.?
- How do you preserve these active ingredients?
- How do we know they are beneficial to our health?

Supplementation is not an exact science and is in a state of constant evolution.

Multiple sectors are developing and advancing.

Active ingredients

As in any expanding industry, the discovery of new active constituents increases the sales market. Some new concepts are intriguing, such as methylcobalamin, the optimal form of vitamin B12 (difficult to obtain with a healthy diet), whereas others are ineffective, such as beta-sitosterol (found naturally in nuts, other oilseeds, and wholegrain cereals).

Synergy-enhancing substances

Appropriately, superfoods, foods or plants that enhance the absorption of nutrients are frequently included in the composition of supplements. Quality is not always present; therefore, it is essential to be adequately advised on the selection of supplements.

Excipients and additives

Excipients and additives will be discussed in depth in the "Quality of supplements" chapter.

Vitamins

Vitamins are essential to the body because our bodies are incapable of producing them.

They must be included in a nutritious diet.

These substances are essential to the proper functioning of our systems, organs, and cells, but they are not used to produce energy like sugars and lipids.

Vitamin deficiency-related diseases are entirely preventable with a nutritious diet.

However, one cannot evaluate the physiological action of vitamins in isolation.

In fact, vitamins interact with one another, either through a potentializing or partially substituting action, or through a competitive action in which an excess of one vitamin can result in a deficiency of another.

It is also important to note that minerals and trace elements are required for the effective utilization of vitamins by our metabolism.

No vitamin factor can be considered in isolation. Indeed, the activity of most vitamins often depends on one or more other nutrients (vitamins, minerals and trace elements). Vitamin interactions can occur at the level of intestinal absorption, metabolism and mechanisms of action of vitamins. A vitamin can substitute itself to a certain extent for another vitamin, act favorably on survival, growth, gestation or the biological and clinical signs of an avitaminosis...

Thus, the onset of scurvy symptoms is delayed in guinea pigs by administration of vitamin A. On the other hand, vitamin interrelationships can have a detrimental effect. An overload of one vitamin can lead to various disturbances, aggravate or even cause a deficiency in another vitamin factor. Thus, in high doses, niacin, choline and folic acid accentuate B1 avitaminosis and vitamin C deficiency is aggravated by vitamin A overload...

It is in fact impossible to recreate in supplements the numerous synergies that exist in foods.

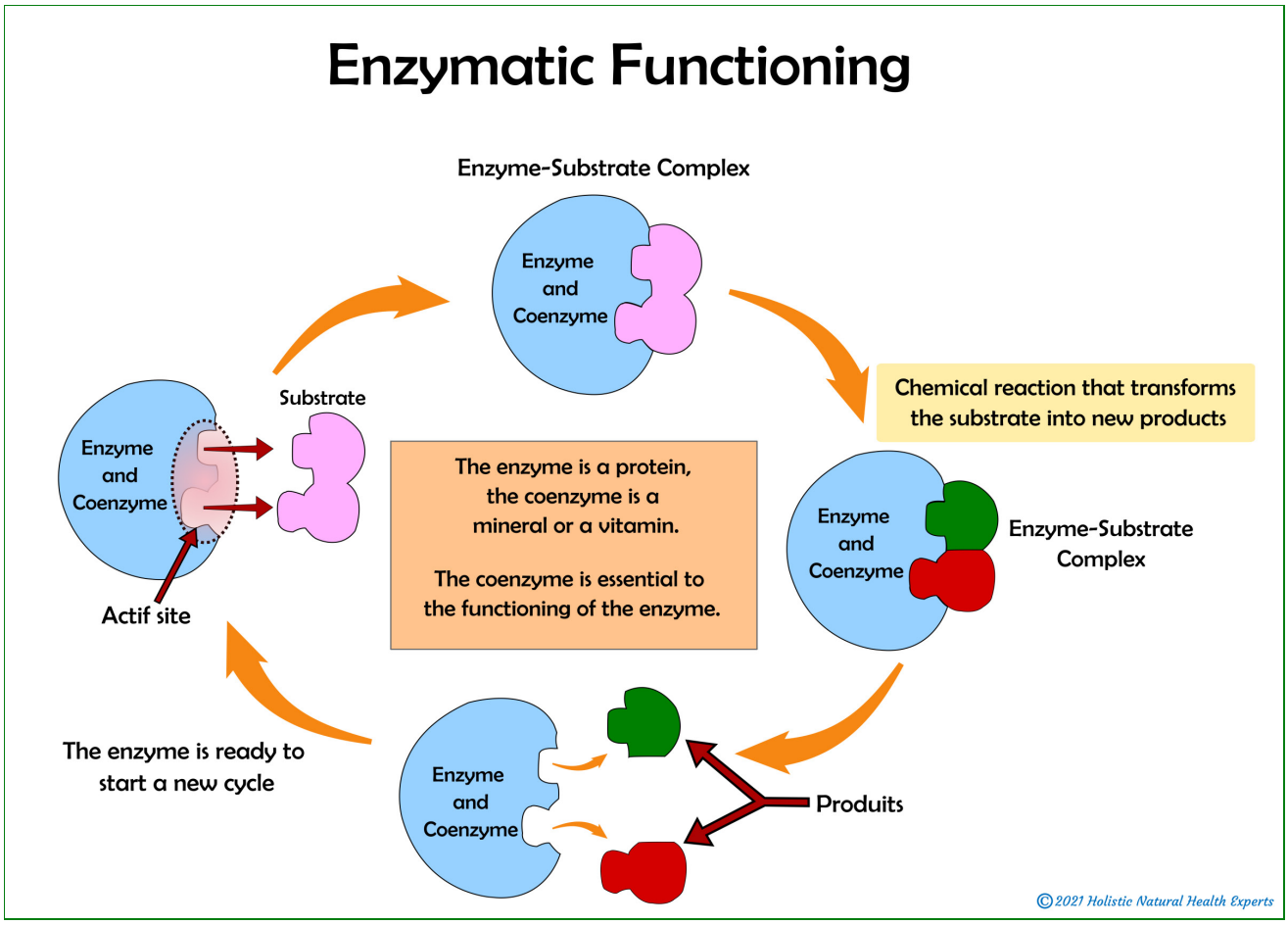
The interactions between vitamins A, D, E and K: synergy and/or competition, Jean-Claude Guilland's

https://www.researchgate.net/publication/272974314_Les_interactions_entre_les_vitamines_A_D_E_et_K_synergie_etou_competition

The action of vitamins

Vitamins are essential to the functioning of the vast majority of enzymes, especially B-group vitamins.

Enzymes are specialized proteins that serve as chemical reaction catalysts. Coenzymes are vitamins and minerals that are required for the function of the majority of enzymes.



A liver-like organ performs the majority of the body's detoxification functions and synthesizes numerous molecules. A vitamin deficiency can have profound effects on the body's function. Vitamin B3, for instance, is an essential coenzyme for the enzymatic functions of the liver.

B1, which is present in axon membranes and essential for the transmission of nerve impulses and the metabolism of brain neurotransmitters, can also be an integral part of cell membranes.

Vitamins can have multiple functions depending on their biochemical form; therefore, they are not necessarily simple molecules with a singular function in the human body.

Under the influence of an enzyme, B1 becomes thiamine pyrophosphate, and this new B1 acts as a coenzyme for energy production and DNA synthesis!

Therefore, each vitamin can serve multiple essential functions for the body.

As an example, vitamin D3 functions more like a hormone, not only promoting calcium absorption by the intestine, but also reducing inflammatory states in the immune system and regulating the expression of hundreds of genes - a true multitasker!

What about vitamins B12, B9, and B6, which play a crucial role in lowering homocysteine levels (a molecule whose elevation can be harmful), as well as in the production of red blood cells (B9, B12), the functioning of the nervous system (B12), and the formation of the neural tube in the embryo (B9), etc.?

Today, we still do not understand the functions of every vitamin!

Fat-soluble and water-soluble vitamins

Since vitamins are present in numerous supplements, these are their names.

We can classify vitamins into two main groups:

Fat-soluble vitamins:

- A or retinol
- D or calciferol (D3 or cholecalciferol)
- E including 4 tocopherols and 4 tocotrienols
- K including K1, K2 or phytomenadione, menaquinone

Water-soluble vitamins:

- B1 or thiamine
- B2 or riboflavin
- B4 or choline
- B5 or pantothenic acid
- B6 or pyridoxine
- B7 or B8 or H or biotin
- B9 or folate
- B10 or para-aminobenzoic acid (PABA)
- B12 or cobalamin
- C or ascorbic acid

Minerals and trace elements

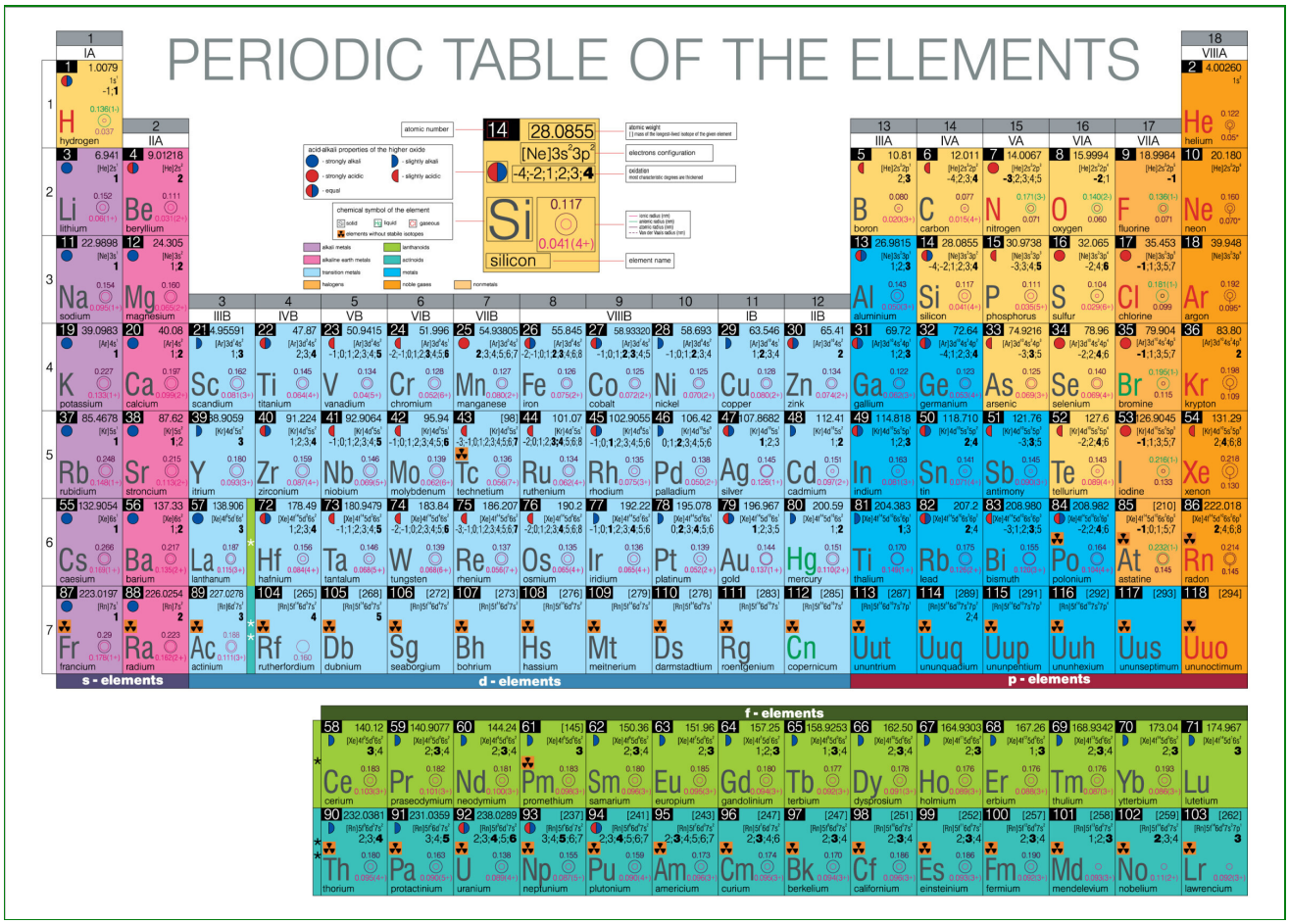
Minerals and trace elements are indispensable to the development and operation of our organisms.

Calcium is the main mineral component of hydroxyapatite (calcium phosphate) in our bones, where everyone is aware of its significance.

However, zinc, magnesium, silica, sodium, potassium, iron, phosphorus, and sulfur are equally important.

The periodic table of elements classifies these minerals and trace elements. They occur naturally in soil, air, water, and plants, in contrast to vitamins, which are produced by plants or microbes.

The periodic table



These substances are referred to by their chemical and physical properties:

- alkali metals (sodium, potassium, lithium)
- alkaline-earth metals (magnesium, calcium)
- transition metals (iron, manganese, copper, chromium, cobalt, molybdenum)
- post-transition metals (zinc)
- metalloids (silica, boron)
- non-metals (hydrogen, phosphorus, silicon, oxygen, nitrogen, carbon, selenium, sulfur)
- halogens (iodine, chlorine, fluorine)

The other categories in the table do not pertain to the elements our body requires.

You'll observe that when we discuss minerals, we're referring to elements that aren't necessarily minerals, but for the sake of language simplification, they're grouped under the term minerals or elements without specifying their category.

Regardless, the elements essential to our functioning are described by their names and functions, not their physico-chemical classification. If you are deficient in magnesium and require a supplement, you will purchase magnesium without realizing that it is an alkaline-earth metal!

On the other hand, you will not receive the same benefits contingent on the form of magnesium present in the supplement, as magnesium oxide, magnesium threonate, magnesium biglycinate, magnesium malate, etc. are not magnesium alone. This will affect the absorption and distribution of magnesium within the body.

Building blocks

We cannot be deficient in certain elements because they are the building materials of our bodies. Without them, our cells, tissues, and organs could not exist.

These elements are:

- carbon
- oxygen
- nitrogen
- hydrogen

Therefore, they are never found as supplements.

Trace elements

Trace elements are so named because they are naturally present in the body in minute amounts (a few milligrams) and can be toxic in large quantities.

However, there is no consensus regarding which elements are exclusively trace elements, and some laboratories that market these products include the minerals our bodies require in much higher concentrations.

Using trace elements in low quantities is known as oligotherapy. It has three purposes:

- boost biological activities linked to the element
- make up for a deficiency in an element, too large a dose of which can be rapidly toxic
- use one or more elements for therapeutic purposes without toxic effects

The most prevalent trace elements include:

- silver
- bismuth
- chromium
- cobalt
- copper
- fluorine
- lithium
- manganese
- molybdenum
- nickel
- gold
- vanadium

Minerals that can also be taken as trace elements:

- calcium
- Magnesium
- iron
- iodine
- potassium
- phosphorus
- selenium
- silicon
- sulfur
- zinc

A deficiency in one of these minerals necessitates weight supplementation, which oligotherapy alone cannot provide.

Antioxidants

The term antioxidant encompasses a vast array of phytonutrients.

Oxidation is a normal chemical reaction in which oxygen strips electrons from an atom or molecule. Iron corrodes due to an oxidation reaction.

In our case, these reactions occur constantly in our cells to generate energy (fatty acid oxidation), to combat pathogens via the formation of ROS (reactive oxygen species), or in the presence of other metabolic aggressions, such as oxygen deprivation.

The lifetime of these oxidizing molecules is on the order of nano to microseconds. However, if their formation is not inhibited or neutralized by antioxidants, they become extremely harmful to our cells and DNA.

Oxidative stress is a condition in which oxidation and non-oxidation are out of balance. It is one of the causes of premature aging and disease, which explains why antioxidant supplements are so popular.

Vitamin C is one of the most widely recognized antioxidants, but there are many others, including quercetin, vitamin A, vitamin E, glutathione, coenzyme Q10, astaxanthin, selenium, epigallocatechin gallate, lycopene, and zinc.

Antioxidants are a heterogeneous group of molecules that neutralize oxidation reactions, thereby preventing injury to cells, blood vessels, and tissues.

Today, there are countless antioxidant supplements on the market, but we would like to remind you:

A healthy diet will forever be the greatest source of antioxidants.

Enzymes

Without enzymes, biochemical reactions cannot occur and therefore life cannot exist.

Enzymes are indispensable for existence and transformation.

Imagine that without specific enzymes, your DNA would be rendered ineffective and you would be unable to produce messenger RNA and, consequently, proteins. There would be no unit. It's that straightforward.

What then are enzymes?

Enzymes are proteins synthesized from DNA by our organisms. Their function is to facilitate the millions of chemical reactions that occur daily in our bodies.

Enzymes can be broadly divided into two major groups:

- those that catalyze the enzymatic digestive reactions that enable us to digest our food in the digestive tract (digestive enzymes)
- those that catalyze metabolic enzymatic reactions, i.e. all the others that take place in cells, blood and tissues and manage our entire organism

Thus, supplementation provides us with digestive enzymes for the first group and systemic enzymes for the second.

While nearly all digestive enzymes are available as supplements, only a few metabolic enzymes are.

Therefore, the therapeutic indications for supplementing either of these enzymes are quite distinct.

For enzyme deficiencies primarily affecting the digestion of sugars, lipids, or proteins, digestive enzymes are recommended.

Improve blood circulation, wound healing, and inflammatory conditions with systemic enzymes.

Enzymotherapy is a very fascinating therapeutic approach, and a wide variety of treatments are available due to the availability of enzyme supplements.

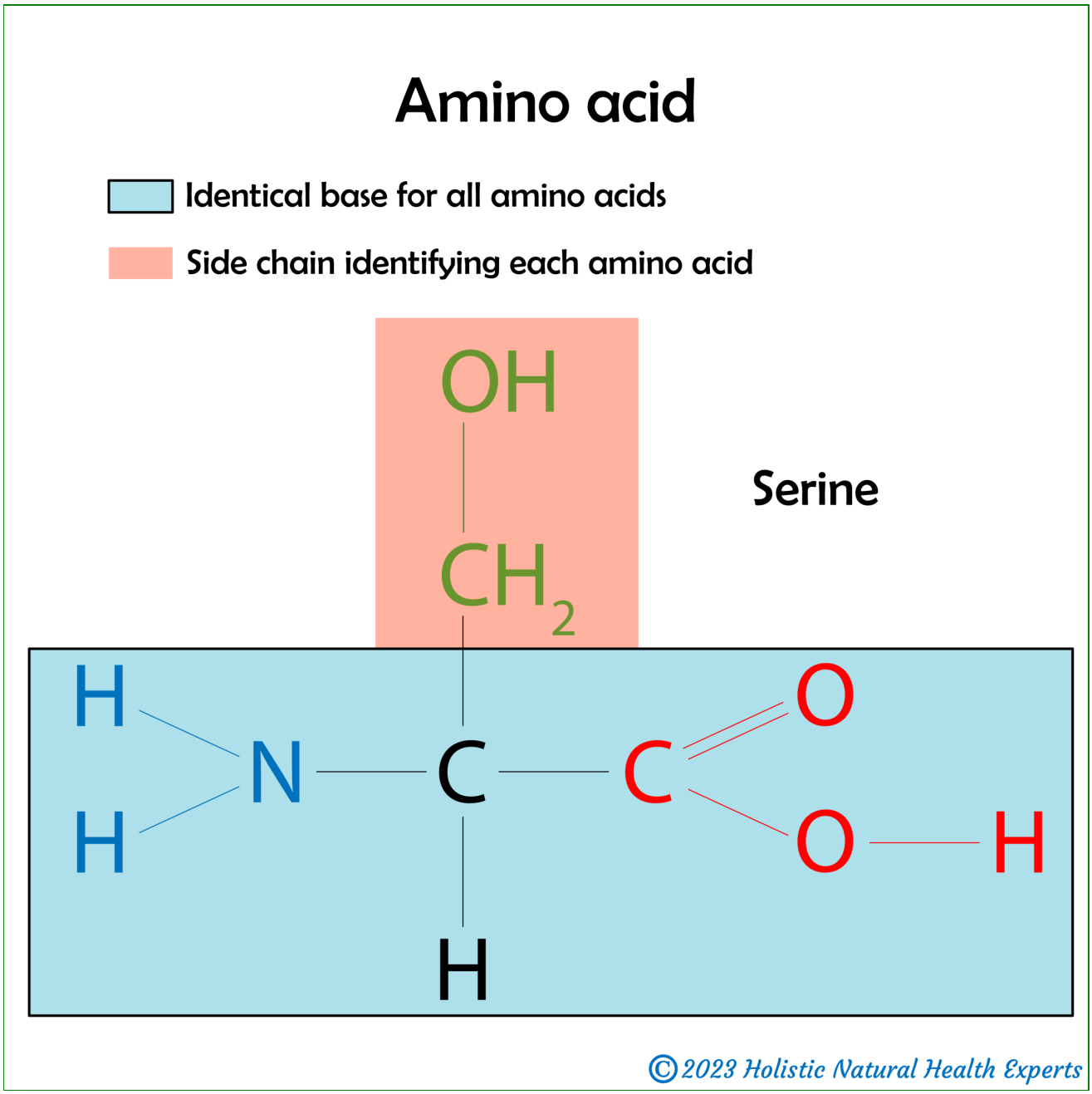
However, enzyme therapy must be administered by a competent therapist who is able to use it appropriately based on the requirements of the patient.

Amino acids

Proteins consist of amino acids. Twenty or twenty-two of them are found in all living organisms.

The structural nucleus of amino acids is an amine, which must contain nitrogen.

Moreover, amino acids, like sugars and lipids, are composed of hydrogen, oxygen, and carbon.



They differ from one another in the complexity of their side chains.

What are the functions of amino acids?

Only 20 to 22 amino acids are encoded in the genomes of living organisms. We must consume the so-called essential amino acids in our nutrition.

The sequence of amino acids that compose proteins is encoded by DNA. Consequently, each protein will possess unique chemical properties and functions.

However, the function of amino acids does not end there. Whether referring to the so-called essential amino acids or the hundreds of others produced by our metabolism, their functions are incredibly diverse but vital. Here are a few instances:

- provide energy (only as a last resort when sugar reserves are depleted)
- the building blocks of all our proteins
- neurotransmitter precursors
- hormone precursors
- precursors of gluconeogenesis (sugar production)
- immunity regulators
- constituents of all our enzymes
- enable the production of new molecules, such as creatine
- etc.

Source of amino acids

Our diet provides the 21 amino acids encoded in our genome.

In this manner, we obtain all of the necessary amino acids, including the so-called essential amino acids that our body is incapable of transforming into other amino acids.

The 9 essential amino acids

It is essential to provide these nutrients to the organism through diet:

- Valine, leucine and isoleucine, known as branched-chain amino acids (BCAAs), are highly present in muscle proteins.
- lysine
- threonine
- phenylalanine
- histidine, considered semi-essential because our body can manufacture it, but not enough to cover all our needs
- tryptophan, a major precursor of neurotransmitters including serotonin
- methionine, a sulphur-containing amino acid

Next, here are the 12 non-essential amino acids, which our body can obtain by transforming other amino acids:

- glutamine, the most abundant amino acid in the body
- aspartate, a key amino acid for energy production
- glutamate, known for its pleasant taste and widely used as a flavour enhancer
- arginine, a great vascular dilator and immune stimulant
- alanine, supports liver functions
- proline, very important for collagen synthesis
- cysteine, important for hair
- asparagine, like aspartate, is essential for energy production
- serine, essential for the synthesis of phosphatidylserine (a key component of cell membranes)
- glycine, essential for collagen synthesis and the nervous system
- tyrosine, a major precursor of dopamine, essential to the nervous system
- selenocysteine, a rare amino acid, which is a component of certain proteins such as glutathione peroxidase

Quality of supplements

This is the primary concern regarding supplements today. The composition and manufacture of supplements are governed by stringent quality standards.

It is difficult to obtain complete satisfaction with the majority of supplements on the market.

Quality criteria

Several significant obstacles confront supplements:

- real physiological action (if possible identical to the substance supplied by the diet)
- extracted from noble raw materials
- no chemical residues following extraction or synthesis
- without harmful additives

Consider a typical example of the quality issues that can arise from the use of synthetic vitamins.

The example of vitamin E

Vitamin E is a fat-soluble vitamin whose functions are absolutely indispensable to the human body. Let's examine several of them:

- antioxidant, especially in cell membranes
- anti-inflammatory
- neuron protector
- regulates the expression of certain genes

To obtain sufficient quantities, it makes sense to ingest high-quality fats (oilseeds, oils, oily fruits, cereals, and pulses).

The case of synthetic vitamin E, a poor-quality supplement

Oily vitamin E supplements are readily available but significantly more expensive than synthetic vitamin E supplements derived from... petroleum!

The presence of synthetic vitamin E is denoted by the presence of DL-alpha-tocopherol, DL-acetate-tocopheryl, or another DL...

Vitamin E is always denoted by the letter D! It consists of two families of four compounds: 4 forms of tocopherols (alpha, beta, gamma, and delta) and 4 forms of tocotrienols (alpha, beta, gamma, and delta); however, the form most prevalent in our bodies is D-alpha-tocopherol, so it stands to reason that this is the most widely sold supplement.

Never purchase a supplement containing synthetic vitamin E, as it is harmful to the body. In addition, if a multivitamin supplement contains synthetic vitamin E, the reliability of the brand may be questioned.

Contaminants

Similarly to edibles, supplements are exposed to the following contaminants:

- pesticides, herbicides, fungicides (hundreds)
- GMO
- flame retardants
- perfluoroalkyl compounds
- dioxins
- Dioxin-like PCBs
- ethylene oxide
- benzene
- etc.

Not to mention additives such as flavorings, colorants and absorption enhancers like polysorbate 80, as well as capsules, tablets and oleocapsules whose composition may contain harmful substances.

Consider an awful example, an effervescent form of vitamin C:

https://www.pharmacie-en-ligne.com/forme-energie-immunite/3622-vitascorbol-vitamine-c-1000-mg-24-comprimes-a-croquer-3400933541644.html

> Other components are: Sorbitol, colloidal silica anhydrous, magnesium stearate, lemon flavor*, aspartam, orange yellow S aluminous lake. *Composition of the lemon flavor: essential oils and fractionated products of essential oils of lemon and orange, citral, gum arabic, colloidal silica.

And finally, the contraindications include the following:

> - If you have a history of allergy to any of the components of the tablet, especially to orange yellow S (E110),
> - kidney stones,
> - phenylketonuria (hereditary disease detected at birth), due to the presence of aspartam,
> - if you are on a fructose-free diet, due to the presence of sorbitol.
>
> Precaution for use:
>
> - Due to the presence of orange yellow S (E110), this medication may cause allergic reactions or even asthma, especially in people allergic to aspirin.

Vitamin C effervescent is one of the most toxic vitamin supplements, yet it is also the most accessible.

Advantages of calling on a holistic natural health expert

As supplement-trained therapists, we can exclude all supplements containing... by relying on the quality of the laboratory, reading the label, and conducting our own investigations:

- inappropriate forms of vitamins
- inappropriate dosages
- added substances, whether or not mentioned on the label
- toxic additives
- colorants and flavors

Is that sufficient to constitute an absolute guarantee? No, but it will save you a great deal of grief and disappointment.

The reality behind reassuring marketing

The United States dominates the global supplement market. As a result, the industry generates phenomenal profits. Therefore, it is not surprising that thousands of laboratories and brands have sprung up and are selling their supplements worldwide. But what about quality control and effectiveness? Given that it is guaranteed in theory, it becomes logically impossible to attain.

Here's how Dr Greger explains the situation:

> Researchers found that 100 percent of supplements industry press releases contained "spin," meaning strategies to hype or denigrate findings to distort the results of clinical studies. And here's the crazy part: industry press releases advocated supplement use in response to >90 percent of even the studies that reported no benefit or harm...
>
> In some cases, people are paying to make themselves sick...there are definitely laws on the books, but the ability of regulators to successfully carry out this mission is hampered by the sheer number of products.
>
> The FDA estimates that there are more than 85,000 dietary supplement products currently available in the U.S. alone...
>
> Dietary supplements are often adulterated with undeclared pharmaceuticals, which could represent an enormous risk to consumers...
>
> Michael Greger M.D. FACLM · August 22, 2022 · Volume 59
>
> https://nutritionfacts.org/video/supplement-regulation-and-side-effects-efforts-to-suppress-the-truth/

The issue is serious, so let's not minimize it.

The quality of a complement through an example

Mercola's vitamin complex is among the most highly regarded and efficacious brands. Obviously, there are other examples of quality, with dozens of laboratories treating their supplements seriously.

For a multivitamin-multimineral, we have always prioritized adhering to the principle of using constituents derived from natural foods.

The example below is somewhat lengthy, but it addresses multiple issues:

- quality
- the quantity
- the origin of vitamins and minerals
- the necessary combination with superfoods
- synergy between several substances

https://media.mercolamarket.com/assets/pdf/product-labels/MultiVitamin-plus-label.pdf

https://www.mercolamarket.com/product/1010/1/whole-food-multivitamin-plus-vital-minerals-240-per-bottle-90-day-supply

https://www.youtube.com/watch?v=KxtkC3J_3Y0

Can vitamin makers really pack *everything* you need into a single capsule or pill? They certainly want you to think they can. Here's the evidence that they simply can't if you're looking for the high quality supplementation you expect.

When creating a complete multivitamin in combination with foods, it is essential to keep in mind that ingredients occupy space and cannot be compressed beyond a certain point.

This is in response to the illogical desire of some consumers to obtain all nutrients in a single capsule.

A highly concentrated daily supplement, our formula contains more than 50 nutritional ingredients in a special herbal food base, including hard-to-find ingredients like spirulina, red wine proanthocyanidins, citrus bioflavonoids, lycopene, chlorella and trace elements from red seaweed...

Makers of multivitamins have come up with some pretty amazing ways to compress ingredients, but not to this extreme... not down to where a single tablet provides you the vitamin and mineral levels you need on a daily basis.

For this example of supplement, over 50 constituents must be compressed into tablets in order to achieve optimal absorption. This is the case for all multivitamins combined with superfoods, as you will need to take several tablets per day to attain the required dosage.

I believe it's *always* better to get your nutrients from healthy food that's been carefully and thoughtfully produced.

While it's best to get your nutrients from food, our non-organic food supply has changed significantly...

If you don't consistently eat *organically food grown by regenerative or Biodynamic farming methods*, you most likely could benefit from high-quality supplementation.

Unfortunately, even those who consume an organic, plant-based diet may require vitamin and mineral supplements, either because the soil is degrading or because the modern way of living generates too much stress, requiring more vitamin and mineral resources from our bodies.

...Four factors have played key roles in declining food nutrient values, with significant drops in crucial minerals like phosphorus, selenium, copper, magnesium, cobalt, calcium, zinc, and iron...

...According to an Australian soil scientist, conventionally grown apples have lost 80 percent of their vitamin C....

People who do not consume a plant-based, organic diet confront a double problem.

Due to soil depletion and pesticide use, these people are faced with unavoidable nutritional deficiencies. Foods can have a beautiful exterior aspect while still being deficient.

On the other hand, they will accumulate toxic substances, such as pesticides, heavy metals, endocrine disruptors, and other contaminants, in their bodies.

The result is the development of malaise, characterized by symptoms such as fatigue, lack of concentration, sleep disorders, weight gain, etc.

Therefore, without the assistance of a natural medicine therapist, many individuals have become accustomed to taking supplements without understanding what they are ingesting.

Let's return to our original example of a vitamin-mineral supplement containing magnesium and potassium, two essential minerals that are in limited supply in the average "omnivorous" diet. Magnesium is essential for the health of our nervous, muscular, skeletal, and immune systems. It is one of the most prevalent mineral deficiencies.

Magnesium - Scientific studies have reported that magnesium is helpful in supporting your lungs and pulmonary system, as well as your entire body. As you age, you're more likely to be deficient in this important mineral. The latest research shows that magnesium may help protect your cells against the harmful effects of EMFs or non-ionizing radiation that surrounds us 24/7.*

Magnesium works with calcium and vitamin D to promote bone density health. It also helps maintain your muscular and nervous systems, and it helps support your healthy heart, and energy needs.*...

Potassium is abundant in plants, and it is essential for our nervous system and cellular metabolism.

Due to a deficiency in fruits and vegetables and excessive consumption of salt (sodium chloride), the sodium/potassium ratio becomes unbalanced, which disrupts cellular metabolism. Our organs and tissues endure as a result.

Potassium - This important mineral plays a key role in your metabolism and your body's delicate balance of water and electrolytes. The regulation of your heartbeat, your muscle function, your healthy blood pressure, and nerve impulses all depend upon sufficient levels of potassium.*...

In addition to zinc, iodine, molybdenum, chromium, etc., a decent vitamin-mineral complex contains various other essential minerals.

An antioxidant complex can be consumed on its own, either by supplementing the diet directly or by consuming nutrients such as spirulina. For this reason, a person with a healthy diet may choose supplements with a narrower composition.

Free radicals are highly reactive molecules and fragments of molecules that impact your body at your cellular level, especially your mitochondria, or your cells' powerhouses.

Free radicals constantly attack your body proteins, carbohydrates, fats and DNA and can cause potentially serious health concerns unless they are kept in check.

Every cell in your body suffers an estimated 10,000 free radical hits each day. Your body does its best to fight back - in what is an actual battlefield at the cellular level!...

We've included more than 2,000 mg of nutrients based on vegetables, fruits, herbs and green foods These nutrients work together to promote your optimal health in the following ways:*

The quality of a supplement cannot be improvised. Do not harm your health by purchasing anything.

If an expensive supplement is not an assurance of quality, supplements sold in grocery stores for a few dollars are a guarantee of mediocrity or, worse, danger.

In fact, there are frequently more additives than active constituents on the label.

We may add one more rule:

The fact that a supplement is sold in a supermarket or any other store does not guarantee its quality.

We have no choice but to analyze the quality criteria outlined at the outset of this chapter.

Of the thousands of laboratories in existence, only a few dozen can guarantee supplements of impeccable quality.

Here are some examples of brands ranging from average to excellent:

- Garden of Life
- Mary Ruth Organics
- Weleda
- Healthforce superfoods
- Fruily
- Soleil vie
- Childlife
- Purasana
- Biophenix
- Dynveo

Choice of raw materials

All supplements are produced from primary materials. Thousands of laboratories, for instance, sell lutein, but only a few dozen act as wholesalers. For other raw materials, there may be only three or four wholesalers in the globe.

This pyramid scheme allows thousands of companies/brands/retailers to package and sell identical source materials.

Primarily, raw materials are selected based on their cost.

A large proportion of these are manufactured in China, which is not inherently indicative of inferior quality. What is certain, however, is that a very inexpensive raw material cannot be of high quality; it simply assures maximum profit for the company that will transform it into a complement.

How safe is it for consumers?

The level of safety can vary significantly based on the parameters we have just outlined.

Let's take a look at the most vital considerations for optimal safety:

- the laboratory: it is essential to evaluate its reputation, ethics, supplement selection, and scientific communication regarding the origin of the substances used.
- whether effective extracts or formulations/associations are used;
- no unnecessary additives
- the guarantee of GMO-free or, even better, organic ingredients
- a certificate of analysis

As we saw with the quote from Dr. Greger, who is not a fan of supplements, many of these points can be false, which is why a single point is never sufficient to have faith in a product.

Improved bioavailability

The ability of supplements to increase the rate of absorption of active substances is an undeniable benefit. There are numerous technological options for achieving this objective.

Gastro-resistant capsules or tablets

The stomach is an acidic organ, which can inhibit or even degrade the absorption of certain supplements. A typical capsule dissolves in approximately five minutes, releasing its contents into the gastric fluids.

Gastro-resistant capsules delay dissolution by about an hour, allowing them to travel through the stomach undissolved and only open in the small intestine, where the capsule's contents become acidic.

However, it is recommended to take gastro-resistant capsules outside of mealtimes because, depending on the food consumed, they can remain in the stomach for more than three hours.

The first concern is how to obtain a capsule with gastro-resistance.

Years ago, the only viable solution was to apply a liquid plastic film!

In other terms, these capsules were most certainly poisonous.

Today, we have DRCapsTM, which are made from hydroxypropylmethylcellulose, a semi-synthetic, inert cellulose whose altered molecular bonds make it resistant to stomach acid. These capsules can be used for any supplement that requires a capsule with gastro-resistance.

Rosin, which occurs naturally in the oleoresins of Pinus soxburghi and Pinus toeda, is an alternative solution. Rosin, which is made up of glycerol, sorbitol, and mannitol, can delay the release of substances, allowing them to travel through the stomach with minimal loss.

In addition, the special cellulose used in acid-resistant capsules is an alternative to plastics.

Acid Armor® Capsules by Arthur Andrew Medical are a revolutionary new capsule that acts like an enteric coating. Acid Armor are made with cellulose (the main component of veggie caps), and designed with unique polymer properties to slow the capsule opening times once swallowed. These cellulose capsules are a much healthier option than enteric coatings. Enteric coatings use Phthalates which are plastic chemical polymers. ...

This means that the Acid Armor capsule provides ample time for the enzymes to get through the stomach and into the more "enzyme friendly" environment of the intestines.

https://arthurandrew.com/products/heprinol

Liposomes

In the "Galenics" chapter, we have already covered liposome technology. The absorption is more effective the smaller the liposomes. Solvents and detergents should not be utilized.

For instance, Physiomance vitamin C liposomes are manufactured as follows:

> PHYSIOMANCE VITAMIN C LIPOSOMALE meets many quality criteria:
>
> Liposomes between 100 and 180 nm ;
>
> Encapsulation carried out at very high pressure;
>
> Ingredients of European origin (phospholipids from sunflower);
>
> Sonication technique (no use of solvent or detergent).
>
> https://www.therascience.com/fr_int/vitamine-c-liposomale-phy379.html

Phytosomes

Phytosomes are phospholipid-bound plant extracts, allowing the active component to be incorporated directly into the membrane.

In this instance, phytosomes extend beyond the realm of supplements, as their application involves both supplements and plants. One of the most well-known is curcumax by Meriva, which enhances the absorption of curcumin.

> The structural difference between liposomes and phytosomes is that liposomes have their active ingredient inside the hydrophilic cavity or within the layers of membranes while in phytosomes, those components are a part of the membrane itself...
>
> The resulting complex helps these active ingredients to pass through the outer membrane of gastrointestinal cells and reach their functional site. Due to this, the absorption of these components is greatly increased and their bioavailability becomes much greater as compared to the original component (Kidd and Head, 2005).
>
> Monjurul Hoque, ... Preetam Sarkar, in Innovative Food Processing Technologies, 2021
>
> https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/phytosome
> https://www.sciencedirect.com/referencework/9780128157824/innovative-food-processing-technologies

Microgranules

Again, a clever combination of supplements with plants and mushrooms assures a slow release of active ingredients.

The microgranule technology offers specific gastro-protection of the active ingredients. The protective layer of the granules dissolves over time and can resist gastric acidity. In this way, the active ingredients can reach their point of absorption, in the intestine, without being really damaged to preserve their benefits.

Studies have shown that only 4% of the active ingredients are degraded in an acidic environment compared to 20% for a classic powder.

https://fr.produits-nutritifs.com/blog/les-principaux-avantages-des-complements-en-microgranules-b60.html

Micronization

Due to high pressure, but without the use of heat, substances can be broken down into very small particulates in order to maximize their absorption and thus bioavailability.

Not to be confounded with nanoparticles, which measure less than 0.1 micrometers, micronization now enables the production of supplements with particle sizes as small as 2.5 microns.

Indications for supplements

Supplementation of uncertain effectiveness

Self-medication may not accomplish its intended purpose. It can sometimes mislead you into believing that you are immune to inflammation, cancer, autoimmune disease, or aging when you are not. To be effective, supplements must be incorporated into an individualized treatment plan.

Despite the fact that healthy food satisfies all of our physiological requirements, people do not always live in optimal conditions or know how to optimize their diet naturally for a variety of reasons.

We intuitively understand that we must do more than consume to survive: we must also take care of our bodies.

The supplements serve multiple purposes:

- make up for deficiencies
- combine several active ingredients to obtain physiological effects that complement a natural or medical treatment
- administer active ingredients in concentrated form when necessary

You've likely seen the common disclaimer on supplement packaging: "Not a replacement for a varied diet and a healthy lifestyle." This is an absolute fact.

Fundamentals first

Supplements cannot replace a wholesome diet. The absorption of nutrients from food is unquestionably preferable to that of supplements. Giving food its proper location should be a priority for anyone concerned with their health.

We advise you to peruse our book: "Alimentation Saine : Votre Droit Fondamental".

Neither do supplements make up for the lack of water in our bodies, and staying hydrated with pure water is a much more prevalent issue than we realize.

To accomplish this, we suggest reading our book: "Bien S'Hydrater avec de L'Eau Saine".

Improving your physical fitness can be just as effective as taking certain supplements for maintaining your general health and joint health.

Our publication "Mouvement et Sport pour une Santé Optimale" is highly recommended reading.

No supplement can substitute for sleep. If you have sleep problems, you should take them seriously and consult a natural medicine expert to establish a natural treatment that targets the underlying cause of your sleep problems.

Indications for supplements

When confronted with a specific issue, many individuals choose supplements on their own.

Since laboratories are not permitted to make therapeutic claims for their products, they can classify them by target organ or system.

Here are a few examples:

- Immune system
- Nervous system
- Cardiovascular system
- Digestion and liver
- Stomach
- Skin
- etc.

Additionally, laboratories can categorize them by indication.

Here are a few examples:

- Hair
- General energy
- Sleep problems
- Stress reduction
- Eye problems
- etc.

As is the case with the following products, the product's brand name can allude to its function.

- cardio booster
- stress relief
- natural sleep
- liver support
- etc.

Even if the product's title is written in English, the product's function can be understood in French. In this classification, supplements are almost always associated with medicinal plants.

These indications are therefore standardized: regardless of your actual health, you will take one or two supplements for a given health issue.

This use of supplements is equivalent to using non-natural medicine (conventional medicine), which is unfortunate.

The aim of the laboratories

Obviously, the primary objective of the laboratories is to sell as many supplements as feasible. Therefore, communication with prospective consumers must be especially careful to guide them in their purchases.

You must distinguish your supplements from the competition through their selection, packaging, name, and presentation. Thus, purchasing supplements resembles any other purchase, with the best-marketed supplements selling the most.

Remember that the laboratory's objective is to acquire new clients, not to meet your specific health requirements.

On the other hand, for a holistic natural health therapist, you are the objective. In this case, supplements are just one of many options that your therapist will select based on what he or she deems most suitable for achieving your health objectives.

Blood monitoring of your vitamins and minerals

Some people believe we can fully comprehend the biological actuality of an organism, but this is not the case.

Some vitamins, such as vitamin D, can be reliably measured in the blood, and it is prudent to recommend this at least once every two years, as a significant excess or deficiency can have negative effects on the body, particularly the immune system.

For water-soluble vitamins such as B12 and B9, blood dosage makes sense because they play an essential role in lowering homocysteine levels (an inflammatory factor), but systematic dosing of other vitamins is neither useful nor dependable in the absence of a specific indication.

Vitamin C is an essential nutrient because, unlike nearly all other species, humans cannot synthesize it. We require several grams of vitamin C per day to combat the oxidative stress to which we are subjected, for immune system function and collagen synthesis.

Vitamin C is without a doubt the essential vitamin supplement that everyone should take.

The case of magnesium

Magnesium is one of the most frequently discussed minerals, but measuring magnesium levels in the blood is generally of no interest, except in the case of certain medications, hormonal disorders, or protracted diarrhea.

Blood contains approximately 1% of the body's total magnesium, so if you have worrisome fatigue and cramps, you should not use this test.

However, there are numerous magnesium formulations on the market, and depending on your clinic, some will be superior to others.

Finally, do not assume that magnesium supplements are always necessary. If you have kidney stones, for instance, you should consult a holistic natural health expert before consuming magnesium.

Self-medication, autocompletion and DIY

This is a great occasion to discuss autocompletion, as well as self-medication in general.

In addition, since there are other forms of treatment that anyone can attempt on their own, we would like to broaden the scope of this discussion by discussing the "Do It Yourself" approach to health in general. Both conventional and natural medicine are included.

In the following paragraphs, for simplicity of analysis, we will include self-medication and self-completion in this concept of DIY applied to healthcare.

DIY for health

DIY was originally a concept intended for do-it-yourselfers, a recreational, non-essential field that was not primarily focused on results.

Obviously, this does not mean that no one has ever been severely injured or even killed while performing a DIY project, but these instances remain the exceptions that prove the rule.

Do not misunderstand us; we have nothing against DIY. Instead of systematically delegating and becoming dependent on a variety of devices and technologies, we believe it is essential for everyone to be capable of performing as many tasks as possible on their own.

The issue arises when this concept is applied to critical areas that have nothing to do with do-it-yourself.

We won't compile a list of these categories here, but if they were listed in order of importance, we'd be able to say unequivocally that health is one of the top three areas incompatible with DIY.

How did DIY evolve into DIY health?

YouTube and "tutorials" on... everything and anything

YouTube will shortly commemorate its 20th birthday. We have witnessed an explosion of video content on the Internet in less than 20 years, thanks to YouTube and social networks such as Facebook, which arose during the same time period.

This has greatly benefited do-it-yourself, which has transitioned from tedious written manuals or videos shared via tangible media (CD, HDD, USB key, etc.) to great videos posted online in minutes and accessible from anywhere via a web link.

This has significantly contributed to the democratization of do-it-yourself, giving rise to video tutorials that have rapidly expanded into other fields.

The monetization of YouTube, a predictable bombshell that has transformed the free sharing platform into a ruthless commercial Eldorado where anything goes to make money, tons of money, has accelerated this trend.

Instantaneously, the first successful "YouTubers" became millionaires...

Medical distrust, eco-fashion and influencers

The conventional medical system's inability to meet the requirements of its patients has always generated interest in natural medicines.

This failure has been exacerbated in recent years by a growing public mistrust of all medical professionals.

Consequently, some individuals believe, with justification, that medicine is a corrupt field, that the doctor is frequently not there to serve their interests, and that it is their responsibility to take matters into their own hands.

Simultaneously, the ecological movement and the sudden "awakening" of a portion of the population involved in the slaughter and destruction of our planet are compelling an increasing number of individuals to "retrain" in the vast, nebulous fields of coaching, personal development, alternative healthcare, well-being, etc.

These individuals, not content with having exploited the system, take advantage of it in order to use natural medicines as a means of securing an alternative income in order to set sail and live a "greener" lifestyle.

Since these individuals lack formal training in the field, the majority do not attempt to improvise as therapists, instead practicing DIY health on themselves and sharing their knowledge with as many people as possible.

This is how the pernicious trend of influencers arose, unethically pressuring a number of individuals to disregard their health.

Unprecedented availability and diversity

Buying has never been easier:

- medicines
- complements
- remedies
- creams
- appliances
- gadgets
- etc.

In the ten years since the advent of e-commerce, almost anything can be purchased online.

Demand is increasing, and as a result, the supply of remedies, products, and other treatments has also increased.

Health education vs. DIY

Before explaining why do-it-yourself and health are incompatible, it is essential to distinguish between DIY and health education.

DIY

DIY signifies the individual who, in general, will improvise as a doctor or therapist in order to manage their own health. Self-diagnosis, self-medication, self-treatment, and self-completion are included.

Health education

Anyone interested in learning more about their health is able to do so, with the primary goal of preserving it.

Health education, unlike DIY, does not aim to supplant the doctor or therapist, but rather to teach everyone:

- how our bodies work
- how our lifestyle choices impact our health
- how to take care of your health
- how to improve your lifestyle
- how to use the various health services

DIY and health, a fundamental incompatibility

Again, we have nothing against do-it-yourself projects in DIY and other similar domains.

If you botch the construction of your craft table, the worst that can happen is that it breaks. If you fail at horticulture, you will have expended some effort in vain and will have to begin again.

Health is a completely different story!

Let's examine the four primary causes.

Health, an irreplaceable asset

Although it is obvious, it warrants repeating. We have only one health and one body for the duration of our lifetimes. Normally, this should be sufficient reason to refrain from tampering with your health, but... This is not the case at all.

From birth until our final breath, we must exist with our bodies. It is our life's vehicle, our companion through good fortune and bad, and the only thing we can never escape.

Rich or poor, famous or unknown, white or non-white, tiny or large, everyone is treated equally.

Therefore, it makes sense to maintain our bodies so they can accompany us on all of our excursions.

Would you attempt a do-it-yourself repair on such an expensive item without formal training, knowing that you could not replace it if something went wrong? And yet, many individuals engage in DIY health care.

Health: decisions that are often irremediable

It's not a huge deal if, as an interior decorator, you decide to paint your walls yellow, only to realize later that they should have been painted blue.

It will cost you time and money, and if you don't have either, you'll have to make do until you can fix the problem or find an alternative solution.

Alternatively, if you decide to undergo surgery and shortly thereafter realize that you shouldn't have... You will have to deal with it for the rest of your existence.

In addition, it is essential to recognize that healthcare decisions resemble a cascade.

A series of poor decisions can transform one's health from favorable to catastrophic.

Health, too complex a subject

A person's health depends on numerous factors. Conventional medicine may be beneficial, but it comes with risks and adverse effects.

Natural medicine are not grandma's concoctions. Real therapists require years of study and training, during which they must acquire and comprehend a great deal, such as:

- anatomy, physiology and pathology of the human body
- various diagnostic tools (questioning, palpation, observation, tests, equipment, etc.)
- the function, nature, tropism, combinations, preparations and dosages of each plant
- galenic forms and their use
- the use of biotherapies
- use of equipment and treatment methods
- etc.

And after the studies, the actual work begins: gaining therapeutic experience and, if possible, being mentored in order to understand the vast gap between theory and practice.

It is a real job, similar to being a doctor, and cannot be replaced by a few hours spent viewing online tutorials.

Health, precious time

This is perhaps one of the most overlooked aspects of health care by do-it-yourselfers.

It makes little difference whether dabbling in your garage takes ten hours, ten days, or three months.

On the other hand, meddling with your health is a waste of valuable, irreplaceable time.

Depending on your health, this may have grave or less grave consequences.

Let's examine a few examples to demonstrate this notion.

Example 1:

You suffer from intestinal symptoms such as:

- constipation
- diarrhea
- bloating
- lower abdominal pain
- fatigue after meals
- gastric burn
- nausea

You are attempting to resolve these issues by adopting a low-fodmap diet. As a competent do-it-yourself practitioner, your first instinct was to Google your symptoms.

Obviously, you have no idea that you are wasting your time by continuing to suffer unduly from your symptoms.

After the fodmaps diet, which is ineffective and shouldn't be followed for more than a few days, you attempt the keto diet, which is also ineffective and harmful to your body, followed by the low-histamine diet, etc.

In this situation, you must also consider the repercussions of the persistence of your symptoms and their influence on your body, in addition to the loss of time and effort.

For instance, chronic constipation can result in deformations of the colon, rendering intestinal transit irreparably compromised.

Chronic diarrhea can cause injury to the digestive mucosa, dehydration, and nutritional deficiencies.

We could continue listing symptoms, but we believe you understand the concept.

Example 2:

You have skin issues (dry skin, red spots, varying rashes, irritation, etc.).

You determine to self-supplement by purchasing a large quantity of "skin" supplements. You also determine to apply a variety of creams to your skin, based on natural and/or synthetic ingredients.

Your epidermis improves slightly, but the issue persists.

If the skin condition is not too bothersome, you can live with it and continue to experiment with your treatment in this manner.

Unbeknownst to you, this skin condition indicates an internal condition in your body that, if left untreated, is causing or will cause additional problems.

This is how you miss out on a genuine, effective treatment that would have solved the problem and prevented further symptoms from appearing.

Example 3:

You suffer from chronic migraines, and you apply paracetamol and mint essential oil to your temples as a do-it-yourself remedy.

In addition to not treating your headache permanently and suffering from the side effects of taking frequent anti-inflammatory medication, you lose the opportunity to understand why you have a headache and treat its true causes.

If you had consulted a holistic natural health specialist, none of this would have occurred.

Moreover, if you consult a professional and your headache persists despite appropriate natural medicine treatment, that professional will be able to prudently advise you on the additional diagnostic tests necessary to determine the causes and rule out certain severe pathologies.

DIY, the wrong idea

In conclusion, you should have realized that we vehemently discourage "Do it yourself" for the sake of your health.

If you consider your health to be your most valuable possession, you will concur that it deserves the best care.

Professionally and personally, we are unaware of anyone who has successfully practiced DIY health. On the other hand, we frequently encounter the opposite, which makes therapeutic management more difficult and complex.

Additionally, even for professionals such as ourselves, it can be difficult to practice DIY for our own health. In our circumstance, we are fortunate to be a team and to be able to assist each other.

Basic autocompletion

We saw in the prior chapter why and how autocompletion is a bad concept.

However, there is one exception: the self-supplementation of vitamin D, vitamin C, and vitamin B12.

Vitamin D

During the winter, people who live at latitudes or in conditions that prevent them from producing enough vitamin D must supplement their diet.

> Currently, vitamin D must be considered as a prohormone whose effects go beyond the prevention of rickets/osteomalacia... Epidemiological and experimental data are in favor of a protective role of vitamin D against cancers, type 2 diabetes, cardiovascular, autoimmune, infectious and renal diseases and muscle deficiency. Some intervention studies confirm some of these effects.
>
> https://www.medecinesciences.org/en/articles/medsci/full_html/2010/05/medsci2010264p417/medsci2010264p417.html

Starting at the age of 16,

Unless medically contraindicated, vitamin D is best taken in an oily, plant-derived form produced from lichens, the only plant that contains D3 (cholecalciferol), at a daily dosage of 2000 IU to 5000 IU. Supplementation begins in November and lasts until March (for northern hemisphere nations).

A blood test at the end of the year will guarantee that your vitamin D3 levels do not exceed the maximum level, in which case you should lower your intake to 1000 IU per day, or even stop taking it altogether for a few weeks.

Traditional vitamin D3 blood tests advocate monitoring its precursor, 25 hydroxycholecalciferol (25(OH)D), which is thought to be a more exact marker than vitamin D3, 1,25 dihydroxycholecalciferol (1,25(OH)2D), whose blood levels are more tightly regulated.

The minimum amount is around 20 ng/ml or 50 nmol/l, while the maximum level is around 60 ng/ml or 150 nmol/l.

It should be noted that this maximum rate can be surpassed without incident.

Avoid vitamin D2 supplements, which are less effective because your body must still convert it to D3.

Here are some examples of vitamin D3:

https://ch.iherb.com/pr/sports-research-vegan-vitamin-d3-125-mcg-5-000-iu-60-veggie-softgels/89922

https://www.sunday.fr/vitamine-d3-gelules-vegan-fortement-dose-5000-ui-bioactive.html

https://www.dynveo.fr/vitamine-d3.html

Children - adolescents

We recommend vitamin D3 drops for youngsters, such as the one below, which has 600 IU in three drops. This allows you to dosage according to the needs of each child.

A breast-fed newborn will receive 600 to 900 IU per day for the first 18 months, then the dosage will increase to 600 to 1000 IU per day for the remaining months, depending on sun exposure and season.

https://www.shop-apotheke.ch/de/gesundheit/12370216/vitamin-d-vegan-tropfen.htm?eventName=click%20on%20product%20list%20item&eventType

From November to March (for northern hemisphere nations), the dosage can be increased to 2000 IU per day during adolescence and up to the age of 16.

Vitamin C

Vegetables that have been refrigerated for several days lose some of their vitamin C content, as does cooked vegetables.

It would be irresponsible not to supplement with vitamin C on a regular basis because it plays such a crucial part in our metabolism.

Vitamin C, a powerful antioxidant, is also required for the creation of collagen and elastin, the proteins that make up blood vessels.

When you consider that cardiovascular disease is the first or second leading cause of mortality in so-called "developed" countries, and that the population suffers from chronic vitamin C insufficiency, it's difficult to comprehend why this supplementation isn't available to everyone. Or maybe we comprehend it all too well...

Vitamin C also has significant antiviral activity, particularly when provided in large intravenous concentrations, which goes beyond the scope of typical supplementation. Liposomal variants, on the other hand, produce outstanding outcomes today.

In fact, vitamin C enters the bloodstream directly after fusing with the cells of the digestive mucosa via liposomes, which are small lipid particles. Today, both liposomal and powder versions are available.

Starting at the age of 16

We recommend taking 500 mg of vitamin C twice a day or 1 gram of vitamin C once a day. Several grams per day may be required in some cases (fatigue, infectious diseases, convalescence).

Choose a non-effervescent, additive-free vitamin C.

Here are some examples of quality vitamin C:

https://www.abundanceandhealth.fr/fr/altrient/98-altrient-c-liposomale-vitamine-c-livon-labs.html

https://www.sunday.de/en/vitamin-c-1000mg-high-dose-natural-capsules.html

https://www.fr.nu3.ch/products/nu3-vitamine-c-forte

https://www.therascience.com/fr_int/vitamine-c-liposomale-phy379.html

Children - adolescents

An infant will acquire vitamin C from breast milk when breast-feeding. As a result, we advise breast-feeding mothers to consume at least 1 g of liposomal vitamin C and 1 g of vitamin C powder in capsule form.

From weaning on, in addition to raw mixed fruit, the baby should get 45 mg of vitamin C per day.

https://www.gardenoflife.com/baby-vitamin-c-liquid

When the baby is 18 months old and can walk and chew his food, the dose can be increased to more than 60 mg per day (in addition to blended raw fruit).

https://www.maryruthorganics.com/products/vitamin-c-liquid-drops-4-oz?variant=32416900087905

https://www.gardenoflife.com/mykind-organics-vitamin-c-spray-orange-tangerine

The dosage for children under the age of 12 can be increased to 250 mg per day.

The dosage can be increased to 500 mg per day in two doses between the ages of 12 and 16.

Vitamin B12

Many soil bacteria create vitamin B12, so we should receive plenty by eating fruits and vegetables, especially raw, unwashed vegetables. Unfortunately, this is not the situation for the vast majority of us.

B12 supplementation is thus suggested for everybody maintaining a healthy diet. You supplement yourself rather than the farm animals you eat.

However, there are several reasons of vitamin B12 and other vitamin deficiencies that can affect anyone and any diet. If this is the case, seek the advice of a natural medicine professional.

We're simply talking about basic supplements that are linked to a healthy diet here.

Forms of B12

B12 is available in three forms (hydroxocobalamin, methylcobalamin, and adenosylcobalamin) and can be obtained through products such as this one:

https://alpinamed.ch/fr/produits/produits/usage-interne/complement-alimentaires/b12-trio-spray-doseur

Absorption is also affected by the mode of delivery, which can be capsules/tablets, mouth spray, sublingual tablets, or nasal spray.

Although sublingual or oral sprays are more absorbable, vitamin B12 assimilation varies greatly depending on the individual's physiology.

In the absence of established inadequacies, oral supplementation in the form of tablets or capsules at 500 to 1000 mcg per day for adults, and 100 to 500 mcg as a mouth spray, is recommended.

The Deutsche Gesellschaft für Ernährung e. V. (DGE) recommends an additional intake of at least 3µg of vitamin B12 for an adult. For children aged 1 to 7 years, it is more like 1 to 1.5µg.

The body only assimilates part of the vitamin B12 from food and supplements. Indeed, only 1 to 2µg of vitamin B12 per dose can be actively assimilated through the special protein called intrinsic factor, while only 1% of the total dose can be passively absorbed through the pressure differences of the intestinal mucosa (passive diffusion). From an arithmetic point of view, the total consumption is based on the combination of these two factors.

Our vitamin B12 product in the form of methylcobalamin 1000µg allows the assimilation of 10 to 12µg of vitamin B12.

Assimilation disorders due to problems in the intestine or stomach can, however, considerably reduce these arithmetic values. In addition, many drugs and environmental pollutants prevent optimal assimilation and utilization of vitamin B12. An increased need for vitamin B12 can occur in certain circumstances, for example in the case of infections, stress or pregnancy and breastfeeding.

https://www.sunday.fr/methylcobalamine-b12-bio-active-1000-ug.html?gclid=CjwKCAjw0ZiiBhBKEiwA4PT9z42hPvBzeJ_VH6CSmqX34_737u73f0GF-DNetQ2v3-1kVThW5Q1PfRoCXyAQAvD_BwE

Some people prefer to take greater amounts once or twice a week rather than 500 mcg or 1000 mcg every day.

https://ch.iherb.com/pr/solgar-sublingual-methylcobalamin-vitamin-b12-5-000-mcg-30-nuggets/69619

However, we recommend that you get a blood test for holotranscobalamin (the active form of B12) to see if you are deficient.

In the event of a deficiency, we recommend consulting a holistic natural health professional to maximize your supplementation.

Children and B12

Breast milk provides vitamin B12 to newborns; otherwise, all plant-based infant formulae are B12-supplemented, as required by law.

If vegan babies receive vegetarian growing-up milks after weaning, they are already fortified with B12 (even at low levels).

Select a multivitamin for children that contains vitamin B12. Here's an illustration:

https://ch.iherb.com/pr/maryruth-organics-kids-multivitamin-gummies-strawberry-papaya-and-super-punch-60-gummies/110360

A blood test will determine whether vitamin B12 requirements are being met sufficiently or if supplements should be increased.

In any case, children of all ages can receive 100 mcg dosages as a mouth spray 1 to 3 times each week.

https://alpinamed.ch/fr/produits/produits/usage-interne/complement-alimentaires/b12-trio-spray-doseur

https://ch.iherb.com/pr/dr-mercola-methyl-b12-energy-booster-natural-blackberry-0-98-fl-oz-29-ml/68588

We do not advocate cyanocobalamin vitamin B12 supplements because, while the amount of cyanide utilized to create cyanocobalamin is tiny and removed by our bodies, this form of B12 is not natural.

Today, we are fortunate to have the natural forms directly available as supplements, the most common of which being methylcobalamin.

Vitamin B12 is water-soluble and easily removed in excess, but like any other supplement, there's no need to overdose.

Our recommendation

This basic self-completion method is risk-free and can be used by anyone. A holistic natural health professional, on the other hand, can significantly modify it.

In this situation, the expert will be able to supply you with a far more comprehensive supplement tailored to your individual requirements.

Supplements are not food; they must be used for a specific purpose while adhering to strict guidelines.

If in doubt, we recommend consulting a specialist for suitable supplements.

Conclusion

This concludes our exploration of the world of food supplements. As you can see, this topic is significantly more complicated than it appears.

When selecting the proper supplement, excipients, additives, packaging, scientific information, rules and regulations, medicinal information, bioavailability, and many other factors must be considered.

All of these parameters are extremely tough for the typical person to learn.

However, we hope that the basic knowledge, logic, and understanding we've covered has given you a better understanding of the challenges underlying the world of supplements and how to make the appropriate supplementation decisions.

Supplements are now primarily a high-profit industry. As a result, the vast bulk of information about them is slanted or inaccurate in order to increase sales.

Supplements are continually developing, and while they have many benefits, they will never be able to replace treatments like phytotherapy or aromatherapy.

As a result, taking supplements is not the same as adhering to a treatment plan, much alone treating disorders.

That is why it is critical to seek the assistance of healthcare professionals who can give you with genuine therapeutic care.

When it comes to natural medicines, we recommend seeing a holistic natural health expert who will be able to incorporate the appropriate supplements into a customized natural treatment.

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- Deepened understanding of how your life choices impact your health
- Clarifying health goals that are meaningful and achievable
- Developing a vision of your optimal health and thriving for longevity
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