



Supplements: Types and Forms



CLASSIFICATION

SUPPLEMENTS

VITAMINS



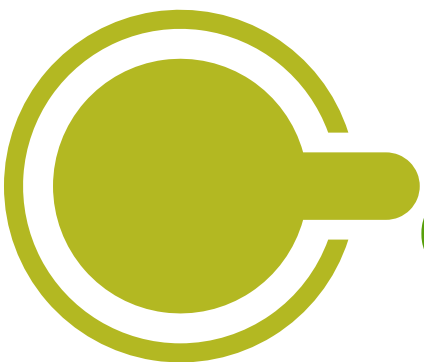
**FATS
FATTY ACIDS**



**FIBER
PREBIOTICS
SUGARS
ABSORBANTS**



**ENZYMES
(digestive & proteolytic)**



**PROBIOTICS
SYMBIOTICS
METABIOTICS**



**HORMONES &
BIOACTIVE HUMAN
COMPOUNDS**



MINERALS



**HOMEOPATHICS
ISOPATHICS
SPAGYRICS**



**ANIMAL-DEREIVED
(Glandulars, Antlers,
Bee products)**



**MARINE-DERIVED &
FUNGAL REMEDIES**



**HERBS
BOTANICALS
POLYPHENOLS**



**AMINO ACIDS &
PEPTIDES**



From the consumer's point of view



1. **General Health and Wellness** (Multivitamins, Omega-3 fatty acids, Vitamin D)
2. **Immune Support** (Vitamin C, Zinc, Elderberry extract, Echinacea)
3. **Energy and Metabolism** (B-complex vitamins, Coenzyme Q10, Caffeine-based supplements)
4. **Digestive Health** (Probiotics, Prebiotics (inulin, FOS), Digestive enzymes, Peppermint oil)
5. **Bone and Joint Health** (Calcium, Vitamin D3 and K2, Glucosamine and chondroitin, Collagen peptides)
6. **Cognitive Function and Brain Health, Enhance focus, memory** (DHA, Ginkgo biloba, Bacopa monnieri)
7. **Sleep and Relaxation** (Magnesium glycinate, L-theanine, Valerian root)
8. **Weight Management and Metabolism** (Green tea extract, Garcinia cambogia, Caffeine)
9. **Athletic Performance and Recovery** (Creatine, Protein powders, BCAAs, Electrolytes (hydration))
10. **Skin, Hair, and Nail Health** (Collagen, Biotin, Vitamin E, Hyaluronic acid)
11. **Hormonal Balance** (DIM (Diindolylmethane), DHEA (precursor hormone), Maca root, Evening primrose oil)
12. **Cardiovascular Health** (Omega-3, Coenzyme Q10, Garlic extract, Magnesium)
13. **Anti-Inflammatory and Antioxidant Support** (Turmeric, Resveratrol, Vitamin C and E, Selenium)
14. **Pregnancy and Prenatal Health** (Folate, Prenatal multivitamins, Iron, DHA (brain development))
15. **Eye Health** (Lutein, Zeaxanthin, Vitamin A, Omega-3 fatty acids (DHA))
16. **Detox and Cleansing** (Milk thistle, Activated charcoal, Dandelion root)
17. **Specialized Medical Support** (Iron and Vitamin B12 (for anemia or vegan diets), Iodine (thyroid health), Chromium (blood sugar control))

But as Experts we need to understand deeper



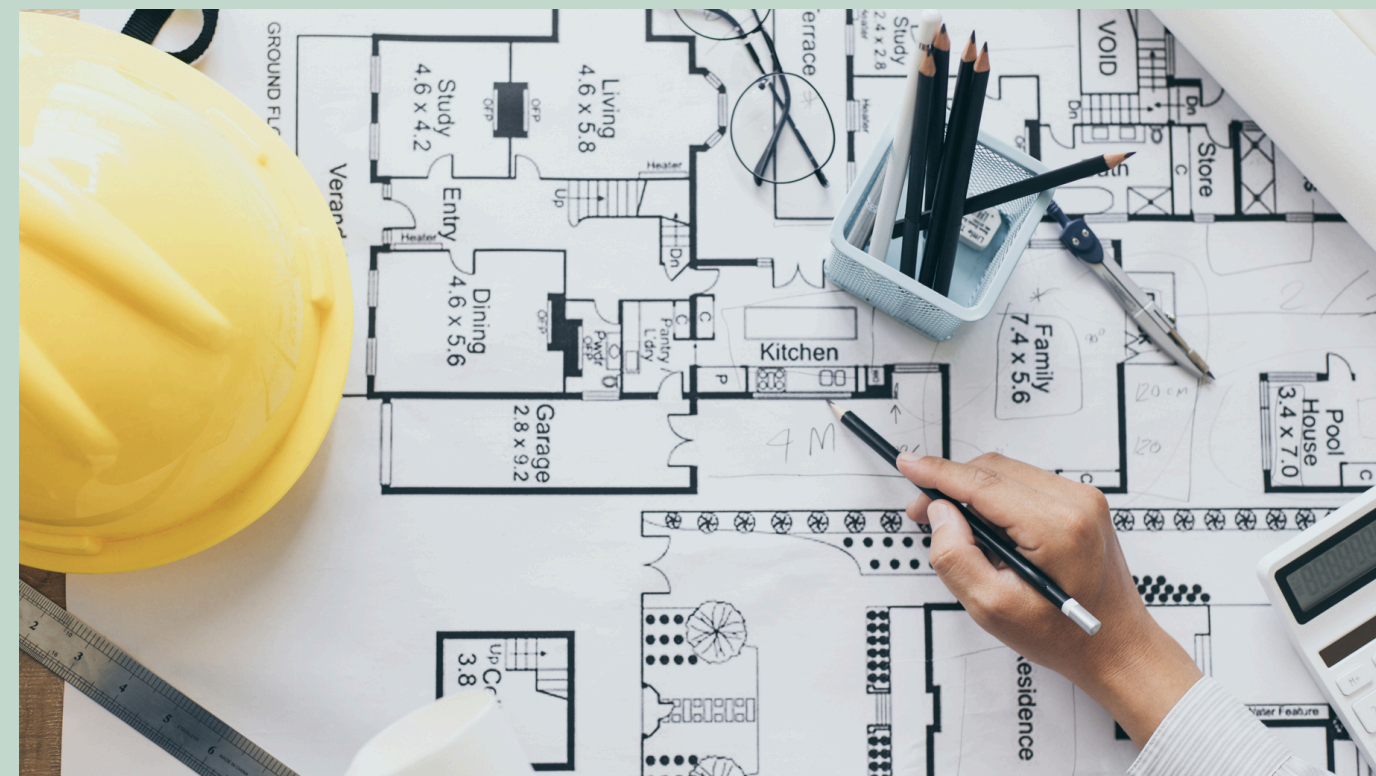
Functional Purpose



Blueprint Supplements

provide essential "instructions" or building blocks for processes like DNA synthesis, hormone production, or cell repair.

- Examples:
 - Folic acid: Supports DNA synthesis and cell division.
 - DHEA: Precursor for hormone production.
 - Vitamin B12: Essential for red blood cell production.
 - Iodine: Critical for thyroid hormone synthesis.



Structural

Build, repair, or maintain the physical structures of the body, such as bones, muscles, and skin.

- Examples:
 - Collagen: Builds connective tissues and skin elasticity.
 - Calcium: Strengthens bones and teeth.
 - Protein powders: Support muscle growth and repair.
 - Glucosamine and chondroitin: Maintain cartilage and joint health.



Fuel

provide direct energy or enhance metabolic processes to fuel the body for activity.

- Examples:
 - Carbohydrate powders: Instant energy during workouts.
 - Creatine: Fuels short bursts of intense activity.
 - Iron: Supports oxygen transport for energy production.
 - B-complex vitamins: Convert food into usable energy.



Catalysts (Process Accelerators)

boost or accelerate biochemical reactions in the body.

- Examples:
 - Coenzyme Q10: A catalyst for energy production in mitochondria.
 - Alpha-lipoic acid: Enhances enzyme functions in energy metabolism.
 - Zinc: Acts as a cofactor for hundreds of enzymatic reactions.
 - Vitamin K2: Catalyzes calcium deposition in bones.



Regulatory (Signal-Modulating) Supplements

regulate bodily functions or fine-tune signaling pathways to maintain balance and efficiency.

- Examples:
 - Magnesium: Regulates muscle contractions and nerve signals.
 - Vitamin D: Supports calcium regulation and immune response.
 - Melatonin: Regulates sleep cycles.
 - Omega-3s: Modulate inflammation and brain signals.



Performance / Endurance Enabling

These act like "gadgets" for the body, enhancing specific performance aspects or functions.

- Examples:
 - Beta-alanine: Increases muscle endurance.
 - Caffeine: Enhances alertness and focus.
 - Alpha-GPC: Improves cognitive function and focus.



Friendly Troops

Deliver “allies” naturally produced by the body:

- Examples:
 - Probiotics (Gut Allies: Lactobacillus and Bifidobacterium species, Saccharomyces boulardii (a friendly yeast))
 - Enzymes (Digestive Allies)- mimic: Enzymes produced by the pancreas and other organs for digestion.



Tools for Adaptation

Help the body adapt to stress, fatigue, or environmental changes.

- Examples:
 - Adaptogens (ashwagandha, rhodiola): Enhance resilience to stress.
 - Electrolytes: Help adapt to physical exertion and dehydration.
 - Cordyceps: Boosts endurance under physical stress.
 - L-theanine: Promotes calm focus during mental stress.



Restoration and Recovery Agents

Repair and restore the body after stress, illness, or exertion.

- Examples:
 - Glutamine: Helps muscle recovery and gut repair.
 - Electrolyte powders: Restore hydration and mineral balance.
 - Velvet Antler: Supports tissues recovery.
 - Bone broth supplements: Aid tissue repair and joint recovery.



ORIGIN



Whole Food vs Synthetic



Derived from whole foods, plants, or animal sources. They typically undergo minimal processing to retain their natural composition.



Synthetic Supplements:
Manufactured in a laboratory, often using chemical processes to mimic the molecular structure of natural nutrients.

BIOAVAILABILITY

- Natural Supplements: Often contain additional cofactors (enzymes, fiber, etc.) that may enhance the body's ability to absorb and utilize the nutrients.
- Synthetic Supplements: May lack these cofactors, potentially making absorption less efficient. Some synthetic forms, however, are designed to be more bioavailable than their natural counterparts.

COST

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- By definition, a **synthetic vitamin must contain all the properties of the vitamin found in nature.**
- If it does not, the chemists have not done their job properly.
- This is the case with **vitamin E**:
 - Natural d-alpha tocopherol succinate is **36% more potent than the synthetic vitamin E** called dl-alpha tocopherol (in this case, the 'l' dictates the chemical difference).
 - So **natural vitamin E**, usually derived from wheatgerm or soya oil, **is better.**

- However, it is thought that **synthetic vitamin C** (ascorbic acid) has the same biological potency as the natural substance, despite advanced scientific techniques having shown visible differences between the two.
- No one has yet proven that natural vitamin C is more potent or more beneficial to take.
- Indeed, most vitamin C is synthesised from a 'natural' sugar such as dextrose; two chemical reactions later you have ascorbic acid.

- ❑ It is true that vitamins derived from natural sources may contain unknown elements that increase their potency.
- ❑ **Vitamin E**, or d-alpha tocopherol, is found with beta, gamma, and delta tocopherol, and the inclusion of these with a measured amount of d-alpha tocopherol may be of benefit.
- ❑ **Vitamin C** is found in nature together with **bioflavonoids**, active nutrients that appear to increase its potency, particularly its capacity for strengthening tiny blood vessels.
- ❑ Good sources of **bioflavonoids** are berries and citrus fruit, so the addition of citrus bioflavonoids or berry extracts to vitamin C tablets is one step closer to nature.

- ❑ It is possible that yeast and rice bran, which are excellent sources of **B vitamins**, also contain unknown beneficial ingredients, so these vitamins are best supplied with yeast or rice bran.
- ❑ **Brewer's yeast tablets or powder** are far less efficient ways of taking B vitamins than B-complex vitamin supplements with a little added yeast – you would have to eat pounds of yeast tablets to get optimum levels of B vitamins.
- ❑ However, some people are allergic to yeast, and if you react badly to any supplements it could be yeast that is the problem.
- ❑ For this reason, many supplements are **yeast-free**.

- There are many other potentially helpful substances that may be provided with nutrients in a complex.
- Included here are substances called **coenzymes**, which help to convert the nutrient into its active form.
- **Vitamin B6** needs to be converted from pyridoxine into pyridoxal-5-phosphate before it becomes active in the body.
- This process requires zinc and magnesium, which are therefore now usually included in a number of B6 supplements.

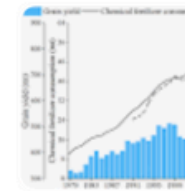
Some natural supplements can be dangerously contaminated!!!

Frontiers

Pollution-Induced Food Safety Problem in China: Trends and Policies

Based on systematic literature study and policy document analysis, this paper investigates the environmental pollution-induced food safety problem in China,...

30 июн. 2024 г.

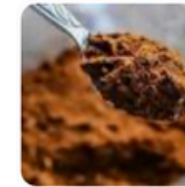


Hindustan Times

Para-athlete handed 12 month ban, blames contaminated supplement

Para-athlete Rajni Jha, banned for 12 months after testing positive for methyltestosterone, blames a contaminated FSSAI-marked supplement.

23 авг. 2024 г.



CBC

Herbal product contamination 'considerable,' DNA tests find

A DNA test of herbal products has found that most of them contained cheaper fillers and plant ingredients not listed on the label, some of which pose serious...

16 окт. 2013 г.



Consumer Reports

Arsenic, Lead Found in Popular Protein Supplements

Some protein supplements have a high level of toxic heavy metals, according to a report from the Clean Label Project.

12 мар. 2018 г.



The choice between synthetic and natural supplements depends on your individual needs, health conditions, and the specific nutrient you're supplementing. For some nutrients, synthetic forms may be equally effective or even preferred.



FORMS



LIQUID

Pros:

- Rapid absorption since no digestion is required.
- Easy to swallow, especially for children or people with swallowing difficulties.
- Can be mixed with drinks for convenience.
- Customizable dosing with a dropper or measuring cup.

Cons:

- Shorter shelf life compared to other forms.
- May have an unpleasant taste.
- Extra non-medicinal ingredients to improve taste
- Requires careful storage (e.g., refrigeration for some).
- Harder to transport without spillage.



TABLET

Pros:

- Long shelf life and stable form.
- Cost-effective and widely available.
- Can hold higher doses of active ingredients.
- Time-release

Cons:

- Can be hard to swallow for some individuals.
- Slower absorption compared to liquids or powders.
- Include fillers or binders that some people wish to avoid.
- Coating may affect digestion for certain individuals.



CAPSULE

Pros:

- Easier to swallow than tablets for many people / can be opened
- Dissolves quickly in the stomach, allowing for faster absorption.
- Typically fewer fillers or binders compared to tablets.



Cons:

- May be more expensive than tablets.
- Gelatin capsules are not vegetarian/vegan-friendly (unless specified as plant-based).
- Sensitive to moisture, which can cause them to stick together.
- Lower capacity for active ingredients compared to tablets.

SOFTGEL

Pros:

- Smooth surface makes them easy to swallow / can be chewed
- Ideal for oil-based or fat-soluble ingredients (like omega-3s or vitamin D).
- Better protection for sensitive ingredients, increasing stability.
- Often preferred for taste-sensitive ingredients.

Cons:

- More expensive than tablets or capsules.
- Not vegetarian/vegan-friendly unless specified.
- Less flexible for dose adjustment (can't split them).
- Can melt or leak in high heat.



CHEWABLE

Pros:

- Great for children or adults who have trouble swallowing pills.
- Often flavored, making them more enjoyable to consume.
- No need for water, making them convenient for on-the-go use.
- Quick absorption begins in the mouth.

Cons:

- Added sweeteners or flavors might not suit everyone.
- Lower doses of active ingredients compared to tablets or capsules / not therapeutic
- Can stick to teeth, increasing the risk of dental issues.
- Not suitable for people sensitive to sugar alcohols or artificial sweeteners.



POWDER

Pros:

- Highly customizable dosing for individuals.
- Rapid absorption as it doesn't require breakdown.
- Great for mixing into smoothies or drinks.
- Ideal for larger doses that won't fit into a capsule/tablet.

Cons:

- Can be inconvenient to measure and mix.
- Some powders may clump or not dissolve well.
- Extra non-medicinal ingredients to improve taste
- May have a strong or unpleasant taste if unflavored.
- Less portable compared to pills or capsules.



LOZENGE

Pros:

- Absorbed directly in the mouth for faster bioavailability (bypassing digestion).
- Can be soothing for throat-related issues (e.g., vitamin C lozenges).
- Convenient and portable with no need for water.
- Often flavored, making them pleasant to use.



Cons:

- Limited to smaller doses of active ingredients.
- Prolonged exposure to teeth may increase the risk of dental issues.
- Sweeteners or flavoring agents
- Slow release may not be ideal for urgent supplementation needs.

SUMMARY

FORM	PROS	CONS
LIQUID	Rapid absorption, easy to swallow, customizable	Short shelf life, taste issues, harder to store, taste
TABLET	Cost-effective, long shelf life, high doses	Hard to swallow, slower absorption, binder/fillers
CAPSULE	Easier to swallow, fewer fillers, quick absorption	More expensive, sensitive to moisture
SOFTGEL	Smooth, good for oils, stable ingredients	Costly, not vegetarian, can't split
CHEWABLE	Tasty, easy for kids, no water needed	Sweeteners, lower doses, dental concerns
POWDER	Customizable, rapid absorption, high doses	Taste issues, less portable, requires prep
LOZENGE	Quick absorption, soothing, portable	Limited doses, dental concerns, slow release



HEALTHY