Supplement Secrets:

A Step-by-Step Buyer's Guide for Choosing the Best Supplements

SUPPLEMENTS REVEALED

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If you're taking (or considering taking) a dietary supplement, it's likely because you want to improve your life in some way. Some of the most popular reasons people take supplements include:

- **Promoting good health**
- **Improving performance**
- **Bodybuilding**
- **Losing weight**

The good news is there are lots of high-quality dietary supplements on the market which can support these efforts and more.

The bad news is not all supplements are going to give you the results you're looking for.

Many contain poor quality ingredients, some don't contain the ingredients their packaging says they do, and some are even tainted with heavy metals, toxins, and pharmaceutical drugs.

At best, you won't feel any benefit and at worst these supplements can make you sick. (If you're a competitive athlete or in a profession which tests for certain drugs, these adulterated supplements can even get you banned from competition or land you in hot water professionally!)

So how can you tell the good from the bad? Which supplement brands are safe to take, and which do you need to steer clear of?

In this Buyer's Guide, designed as a complement to the *Supplements Revealed* docuseries, you'll learn how supplement regulation works, things to watch out for, and "Savvy Shopper Tips" to make you a more confident and skillful consumer.

While the decision is ultimately yours of what to purchase, we share some of our recommended and trusted brands on page 46.

We hope you come away feeling educated and empowered.

To your health!

The Supplements Revealed Team

Dietary Supplements vs Drugs: What's the Difference?

Before we delve into the ins and outs of the supplement industry and factors you need to be aware of when shopping for good quality supplements, let's start with reviewing exactly what a "supplement" is and how it differs from a "drug".

What Is a Supplement?

Under the Federal Food, Drug, and Cosmetic Act, "a dietary ingredient is a vitamin; mineral; herb or other botanical; amino acid; dietary substance for use by man to supplement the diet by increasing the total dietary intake; or a concentrate, metabolite, constituent, extract, or combination of the preceding substances."[1]

While supplements fall under the general umbrella of "food" in the U.S., federal law defines dietary supplements as products that:[2]

- Are taken by mouth (such as a tablet, capsule, powder, or liquid)
- Are made to supplement the diet
- Have one or more dietary ingredients
- Are labeled as being dietary supplements

Herbal supplements (aka "botanicals") are a subset of dietary supplements that contain one of more herbs. They are made from plants, algae, fungi, or a combination of these and sold as teas, extracts, tablets, capsules, powders, or in other forms.[3]

Any Product That Makes a Health Claim Is Considered a "Drug"

Products that bear disease claims are classified in the U.S. as drugs. The Food & Drug Administration (FDA) approves new drugs on the basis of scientific data submitted by a drug sponsor to demonstrate the drug is safe and effective.[4] Drugs must have FDA approval before going to market.

Manufacturers and distributors of dietary supplements, on the other hand, do not require FDA approval to sell their products.[5] This is why supplements are very much a product where the phrase "buyer beware" carries so much weight (and why the *Supplements Revealed* docuseries was created!).

Supplements are not permitted to make claims that they "prevent, treat, mitigate, or cure" any health condition or disorder. That's why you will generally see supplement claims limited to "enhancing" or "supporting" a particular area or areas of health.

What You Should See Listed on Every Dietary Supplement

Except in the case of very small businesses that are exempt, what you should see on every dietary supplement label are the following items, as required by law:[6]

1. A descriptive name of the product stating that it is a "supplement"
2. The name and place of business of the manufacturer, packer, or distributor
3. A complete list of ingredients
4. The net contents of the product
5. Nutrition labeling in the form of a "Supplement Facts" panel that identifies each dietary ingredient contained in the product
6. Any ingredients not included on the "Supplement Facts" panel must be listed in the "other ingredient" statement beneath the panel

Safe Supplement Use

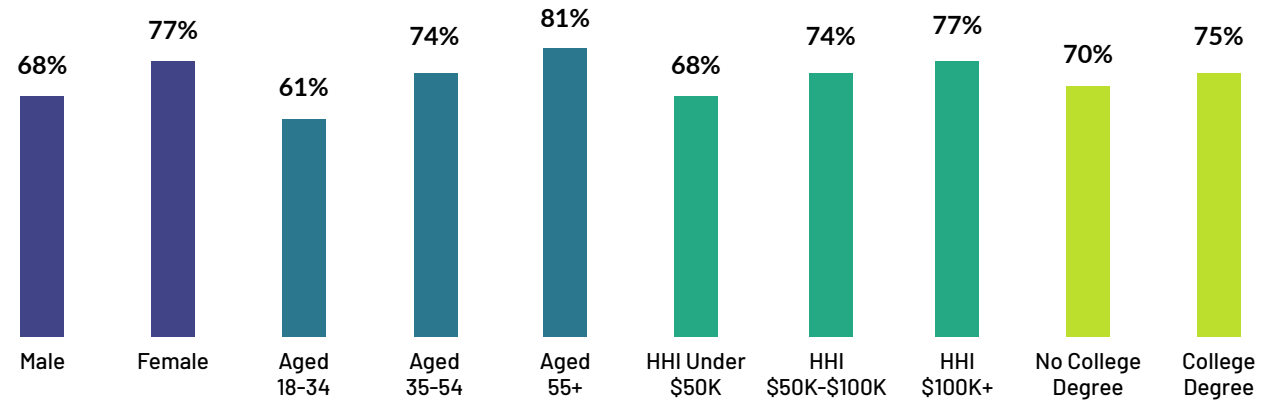
The National Institutes of Health (NIH) recommends the following supplement safety tips:[7]

- Tell all of your health care providers about any dietary supplements you use. Some supplements can interact with medications or affect medical conditions.
- Read the label instructions for use.
- "Natural" doesn't always mean safe. For up-to-date news about the safety of particular supplements, check nccam.nih.gov/news/alerts.
- Too much might be harmful. Don't take more than the recommended dose.

Multivitamins: The Most Popular Dietary Supplements

According to the *2020 Council for Responsible Nutrition Consumer Survey of Dietary Supplements*, 77% of women and 68% of men take one or more dietary supplements. The higher the income level and level of education, the more likely someone is to take one or more supplements.

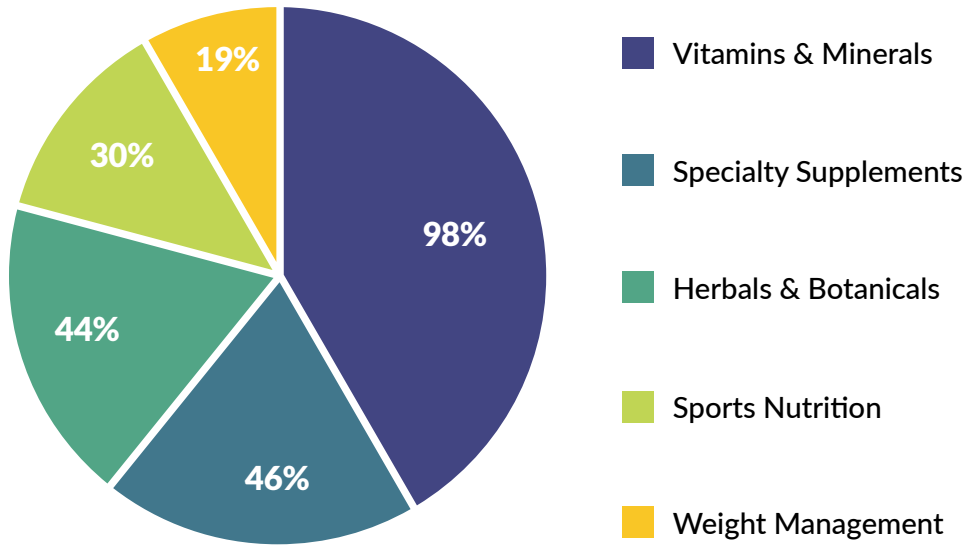
Who Takes Dietary Supplements?



Source: www.crnusa.org/sites/default/files/images/2020-survey/CRN-2020-Prelim-Who.png

Of these supplement users, the vast majority (98%) take vitamins/minerals (most typically a multivitamin). Specialty supplements and herbal & botanicals are the next most popular supplements at 46% and 44% respectively.

Dietary Supplement Usage By Categories



Source: https:/www.crnusa.org/sites/default/files/images/2020-survey/CRN-2020-Prelim-Categories.png

Considering how common it is to take a vitamin and mineral supplement, do you know the difference between vitamins and minerals, where they come from, and which ones your body needs?

Let's quickly review...

What Are Vitamins?

As defined in the *Food & Nutrition Encyclopedia, 2nd Ed.*, "Vitamins are organic substances that are essential in small amounts for the health, growth, reproduction, and maintenance of one or more animal species, which must be included in the diet since they cannot be synthesized at all or in sufficient quantity in the body. Each vitamin performs a specific function, hence one cannot replace another. Vitamins originate primarily in plant tissues."[8]

There are 13 essential vitamins – "essential" meaning that each vitamin has an important role and is both required and necessary for your body to function optimally. Vitamins are either fat soluble or water soluble.

Fat-soluble vitamins are dissolved in fat and can be stored in the body (liver, fatty tissue, and skeletal muscle) for long periods of time. These vitamins are:

- Vitamin A
- Vitamin D
- Vitamin E
- Vitamin K

Water-soluble vitamins dissolve in water, are not stored in the body, and must be replenished daily. Water-soluble vitamins are:

- Vitamin B1 (Thiamin)
- Vitamin B2 (Riboflavin)
- Vitamin B3 (Niacin)
- Vitamin B5 (Pantothenic Acid)
- Biotin
- Vitamin B6 (Pyridoxine)
- Vitamin B9 (Folate)
- Vitamin B12
- Vitamin C

What Are Minerals?

Minerals are inorganic nutrients that occur naturally in nonliving things, such as rocks and metal ores. You get them naturally in your diet through consuming plants that take up minerals through the soil they're grown in. (Although if the soil is depleted of minerals, they can't be present in the plant.) Minerals don't dissolve in fat or water and are a vital part of a healthy diet.

Essential minerals can be divided into two categories: major (macro) minerals and trace minerals (microminerals).

Macro minerals your body needs are:

- Sodium
- Chloride
- Potassium
- Calcium
- Phosphorus
- Magnesium
- Sulfur

Trace minerals are needed just as much by your body as macro minerals, but in much smaller amounts (i.e., you only need a "trace" of them). Trace minerals include:

- Iron
- Zinc
- Iodine
- Selenium
- Copper
- Manganese
- Chromium
- Molybdenum

Other trace nutrients known to be essential in tiny amounts include nickel, silicon, vanadium, and cobalt.[9]

7 Good Reasons to Take a Multivitamin

In a perfect world, a balanced diet would provide all the vitamins, minerals, and other nutrients your body needs. But for most of us, the world our food is produced in is far from perfect. Here are 7 reasons why getting all the nutrients you need from food is difficult, if not downright impossible.

1

Loss of Topsoil.

Topsoil erosion is a major environmental problem worldwide.[10] As topsoil is lost, farmers resort to ever more intensive farming practices to maintain their same yield. If minerals aren't restored to the earth, they won't be in the produce grown in it.

2

Diminishing Nutrients in the Food Supply Overall.

Contamination of vegetables, fruits, and meat with pesticides, hormones, heavy metals, antibiotics, and food additives diminishes the nutrients you'll gain from your food.

3

Transportation & Storage of Food.

Produce is often picked early and transported long distances before arriving in your local grocery store. Exposure to air, light, and heat all contribute to nutrient loss.

4

Food Preparation & Cooking.

Overcooking and microwaving food contributes to a loss of enzymes, vitamins, and minerals.

5

Depleted Minerals in Water.

Filtration systems can remove important minerals from water, such as magnesium.

6

Low-Calorie & Restrictive Diets.

Unless you're paying close attention to nutrient density, consuming fewer calories overall and cutting out categories of certain foods usually means taking in fewer nutrients.

7

Most Popular Ready-to-Eat Foods Are Nutrition-Poor.

Many processed and refined foods are laden with sugar, preservatives, salt, and fat, and lacking in the vitamins, minerals, and fiber your body needs.

Vitamins Were Only Discovered Just Over a Century Ago!

Up until the early 1900s, people were not aware of the existence of vitamins and minerals contained within their food.

Then in 1912, a Polish American microbiologist named Casimir Funk discovered that vitamins B1, B2, C, and D were necessary to human health and contributed to the normal functioning of the hormonal system. Funk's revolutionary idea that nutrients could cure disease led to the prevention of nutrient deficiency disease such as beriberi, rickets, and scurvy.[11]

Funk's vitamin research also led to discoveries by other scientists and the introduction of early types of supplements, including cod liver oil. Up until the late 1930s, these vitamins were extracted from food. But then methods started being developed to synthesize vitamins in a lab, which lowered costs and set the stage for mass production of vitamins.[12]

In a 1912 scientific paper, Polish American biochemist Casimir Funk (1884-1967) coined the term "vitamine" that later became "vitamin."

The first One-a-Day vitamin was marketed in 1943 by Miles Laboratories[13] and the popularity of multivitamins exploded over the next several decades.

Synthetic Vitamins & Minerals vs Nature: Is There a Difference?

Today, the vast majority of vitamin & mineral supplements on the market are not extracted from plants but are made with synthetic chemicals derived from:

Petroleum Extracts

Coal Tar Derivatives

Chemically Processed Sugar

Industrial Processed Fish Oils

There are plenty of scientists and health practitioners who support that these laboratory vitamin & mineral analogs (meaning they have a similar chemical structure) are just as effective as the vitamins and minerals found in plant and animal foods and that your body can't tell the difference or that the difference is insignificant.

On the other side of the debate are numerous scientists and health experts who argue that nature knows best. They point to "co-factors" such as trace minerals that accompany the vitamins in the foods we humans eat that can't be reproduced by science.

This latter group believes that the human body knows how to use food nutrients to greater effect and that whole food vitamins and minerals are far more bioavailable. (The majority of experts interviewed for *Supplements Revealed* shared the opinion that whole food supplements are better absorbed by your body and are superior to synthetic vitamins.)

4 Telltale Signs That Ingredients in a Supplement Are Synthetic

As a consumer looking only at the front of a supplement bottle (what's known as the Principal Display Panel or PDP), it can be next to impossible to determine if a supplement is whole food based, synthetic, or a combination of the two.

Learning to read a supplement label is the surest way to really know what you're getting. Here are four tips for distinguishing supplements with ingredients made by Mother Nature versus those made exclusively in a laboratory.

1. Most whole food supplements will proudly state that they're made from real whole foods and botanicals. Synthetic supplements, on the other hand, will stay mum on what they're made with and will focus on other attributes and selling points (e.g., "gluten free", "supports bone & heart health", "keto-friendly").

2. Don't just look at the Daily Value percentage (% DV) in the Supplement Facts sections – read the ingredients list. If the ingredient names sound like a chemical class (ending mostly in "-ate" and "ide") and not real foods and botanicals, it likely means they're synthetic.

3. Check the ingredients list for words that start with "dl" which indicates they're synthetic. For example, "**dl**-alpha tocopherol acetate" and "**dl**-alpha tocopherol" are synthetic forms of vitamin E. Natural vitamin E is labeled "**d**-alpha."

4. If a vitamin is listed simply as Vitamin "X" with no plant names in the ingredients list, it's almost certainly synthetic. But if, for example, you see an ingredient such as "acerola cherry powder" or "camu camu (Vitamin C)" then you know the vitamin C in that supplement is coming from a whole food source.

Savvy Shopper Tip:

As a dietary supplement consumer you need to decide if you're fine with synthetic ingredients or if vitamins & minerals extracted from whole foods is the way to go. If you fall into the whole foods camp, you need to be able identify synthetic ingredients on a label.

Common Natural vs Synthetic Names You'll Find on Supplement Labels[14-17]

Vitamin	Common Natural Names	Common Synthetic Names
Vitamin A	Cod liver oil or whole foods, cultured, retinyl acetate from food, retinol	Retinyl palmitate, retinyl acetate, vitamin A palmitate
Vitamin B1	Thiamine, vitamin B1 from food, cultured	Thiamine mononitrate, thiamine hydrochloride
Vitamin B2	Riboflavin from food, vitamin B2 from food, cultured riboflavin-5-phosphate, flavin mononucleotide (FMN)	Riboflavin
Vitamin B3	Niacin, vitamin B3 from food, cultured, or with coenzymes, niacinamide, nicotinic acid	Niacin, nicotinic acid, nicotinamides
Vitamin B5	Pantothenic acid from food, cultured, pantethine	D-pantothenic acid, dexpanthenol, calcium pantothenate
Vitamin B6	Vitamin B6 from food, cultured, pyridoxal-5-phosphate (P5P)	Pyridoxine hydrochloride, pyridoxamine
Vitamin B7	Vitamin B7 from food, biotin	Biotin, d-biotin
Vitamin B9	Folate, methyl folate, folate from food, 5 MTHF, folinic acid	Folic Acid, pteroylglutamic acid, pteroylglutamate pteroyl-polyglutamic acid
Vitamin B12	Cobalamin, vitamin B12 from food, cultured, methyl B12, methylcobalamin, adenosylcobalamin	Cyanocobalamin
Vitamin C	Vitamin C from food, cultured, acerola cherry, rose hips, camu camu, amla berries, natural liposomal vitamin C	Ascorbic Acid, sodium ascorbate
Vitamin D	Cholecalciferol, cultured, ergocalciferol (from mushrooms), D3	D2, vitamin D analogs, irradiated ergosterol, calciferol
Vitamin E	Tocopherol, vitamin E from food, cultured, d-alpha tocopherols, mixed tocopherols, tocotrienols	dl-alpha tocopherol, dl-alpha tocopherol acetate or succinate
Vitamin K	Phytonadione, phylloquinone, menaquinone, cultured, MK7, MK4	Menadione

Who Oversees Supplement Safety?

Let's briefly review how the dietary supplement industry is regulated in the United States and the key players who are managing public safety.

The Food & Drug Administration (FDA) and the Federal Trade Commission (FTC) share responsibility for dietary supplements and their marketing in the U.S.[18]

Rough Breakdown of Responsibilities:

- The **FDA** is generally responsible for safety, quality, and labeling.
- The **FTC** is generally responsible for advertising (including product claims).

Both government bodies are limited to oversight only after the dietary supplements go to market. Unlike with pharmaceutical drugs, the FDA does not have the authority to require supplements be approved for safety or effectiveness before being sold to consumers.

Another issue is confusion by the public (and even within the agencies themselves!) when it comes to where consumers should send supplement-related complaints. According to a 2018 report by the U.S. Government Accountability Office, "few documents explicitly delineate their differing roles and coordination in oversight, or communicate the roles to industry and consumers."[19]

The result of this lack of understanding is that "consumers may not understand which agency to report concerns to involving Internet marketing, and there is a risk that agencies may not receive consumer complaints directly, which may delay agencies taking action to address a problem."[20]

This is a problem because the FDA itself acknowledges that it has "limited inspection resources"[21] and it relies on consumer complaints to help identify issues. The agency inspects firms it deems as "high risk" once every 3 years and other firms once every 5 years.[22]

For businesses located outside the U.S. that sell products domestically, the FDA "may enter into arrangements and agreements with foreign governments to facilitate the inspection of foreign facilities."[23]

How thorough and effective these foreign inspectors really are, however, remains a bit of a mystery.

CGMP Certification

This isn't to say that the FDA has no processes put in place to promote supplement safety. One important program is **CGMP Certification**.[24]

CGMPs are *Current Good Manufacturing Practices* – a set of guidelines created by the FDA for the manufacturing, packing, labeling, and holding operations of dietary supplements. The current rule came

into effect in 2007 and was completely phased in (depending on company size) by 2010. **It applies to any person or firm that manufactures, packages, labels, or holds dietary supplements.** ("Holding" can refer, for example, to a warehouse that stores or ships supplements on behalf of someone else).

These guidelines are meant to protect public health and safety by ensuring that the supplements in the bottle actually match up with what's listed on its label.

According to the FDA, "quality begins with the starting material and continues with the product being manufactured in a reproducible manner according to established specifications. It is not sufficient, nor effective, to rely solely on end product testing to assure the quality of the individual dietary supplement product sold to the consumer."[25]

If manufacturers follow CGMPs, it *should* ensure that dietary supplements:[26]

- Do not include the wrong ingredients
- Have too much or too little of a dietary ingredient
- Contain contaminants such as natural toxins, bacteria, pesticides, glass, lead, or other heavy metals
- Have improper packaging or labeling

Yet despite CGMPs, investigations by consumer watchdog groups and governmental agencies into dietary supplements have shown that supplements don't always contain what they're expected to.[27-30]

That's why **it always pays to do your homework when choosing *which* supplements to purchase.**

Understanding "Other Ingredients"

If you examine any supplement label, there's usually a section called "other ingredients." Another name used to refer to these extra ingredients is *excipients*. While some excipients are harmless and fill a valid purpose in the production of supplements, others fall somewhere on the spectrum between unnecessary at best and downright harmful at worst.

An excipient is anything used in a supplement or pharmaceutical drug that isn't one of the active ingredients.

Let's first take a closer look at the categories of supplement excipients and then at some of the most common excipients that should be avoided whenever possible.

10 Common Types of Excipients Found in Supplements

- **Acidulants** are used in liquid supplements to inhibit the formation of harmful bacteria.
- **Binders** help tablets and capsules stick together so they don't disintegrate.
- **Bleaching/Whitening** agents are used to whiten or brighten the appearance of a supplement to make it more visually appealing.
- **Coatings/glazes** add a smooth finish to the outside of a tablet so it's easier to swallow.
- **Colorings** are used to improve the appearance of tablets, capsule contents, or liquid supplements.
- **Disintegrants** are ingredients that help a supplement break down rapidly once it makes contact with water or other liquids.
- **Fillers** bulk up the contents of either a capsule so it appears fuller or a tablet so it's larger.
- **Flavorings & Sweeteners (nutritive & non-nutritive)** are used mostly in liquid, chewable, and powder supplements to add a sweeter or more pleasing taste.
- **Flow agents/anti-caking agents** prevent supplement ingredients from sticking together or clumping up during the manufacturing process.
- **Preservatives** (both natural and artificial) help extend the shelf life of supplements.

7 Common Excipient Ingredients You Want to Avoid

As you might imagine just from the long list of excipient types, there are many individual excipient ingredients you would do well to avoid if optimal health is your priority. We'll cover several of the most common ones here.

1 Artificial Colors

You may be surprised to learn that the same food dyes used to give processed foods and candy their bright colors can also be found in many drugs and supplements. While the European Union and Britain have either outright banned certain artificial (synthetic) food dyes or require warning labels due to safety concerns,[31,32] these same precautions have not happened in the United States.

There are seven (7) FDA-approved synthetic food dyes that can show up in dietary supplements in the U.S. They can either be used individually, or in combination to create other colors (e.g., combining red + blue to create purple).

Here is the full list of artificial colors that we recommend avoiding in your supplements (and ideally in your food and beauty products for optimal health):

- **Blue #1 (Brilliant Blue)** – According to the Center for Science in the Public Interest (CSPI), an unpublished study found FD&C Blue No. 1 was linked to kidney tumors in mice.[33]

- **Blue #2 (Indigo Carmine)** – FD&C Blue No. 2 is linked to possible brain and bladder tumors in laboratory rats.[34]

- **Green #3 (Fast Green)** – the least used of the 7 FDA-approved food dyes, FD&C Green No. 3 is typically made from benzene and other petroleum-based products.[35] This little-studied additive was shown to cause significant increases in bladder and testes tumors in male rats.[36]

- **Red #3 (Erythrosine)** – Safety advocates have been trying to have FD&C No. 3 banned in food and pharmaceuticals since the 1960s. It's purported to have caused thousands of cases of thyroid cancer[37] and in a 2012 study was found to cause DNA damage in cells.[38]

  Back in the mid-1980s it looked like a ban on Red No. 3 would happen when the acting commissioner for the FDA wrote:

  "The agency should not knowingly allow continued exposure of the public to a provisionally listed color additive that has clearly been shown to induce cancer while questions of mechanism of action are explored. The credibility of the department would suffer if decisions are not made soon on each of these color additives."[39]

Yet, despite this awareness of the potential health dangers, other industry interests won out and Red No. 3 is still approved for products that go in the mouth. It is banned, however, by the FDA for products that go on the skin due to safety concerns!

Red #40 (Allura Red) – the most widely used food dye of all, FD&C No. 40 not only makes everything from cherry soda to popsicles to cough syrup bright red, it's also used in many products that aren't red to create specific effects.

The CSPI alleges that petroleum-based Red No. 40 may accelerate the appearance of immune-system tumors in mice. They also warn that the dye causes hypersensitivity (allergy-like) reactions in a small number of consumers and might trigger hyperactivity in children.[40]

Yellow #5 (Tartrazine) – first approved for food use back in 1969, FD&C Yellow No. 5 was subsequently approved for drugs taken by mouth, topical medications, cosmetics, and eye area treatments.

In 1986 the Joint Council of Allergy and Immunology urged the FDA to ban Yellow 5 due to severe allergic reactions reported by some people.[41] Yet despite this recommendation, the FDA has not acted, and this lemon-yellow food dye is the second most used food dye after Red No. 40.

Yellow #6 (Sunset Yellow) – While animal studies have provided no clear-cut evidence that FD&C is carcinogenic or genotoxic (causing cell mutations that lead to cancer), it can cause allergic or pseudo-allergic reactions in certain people.[42]

As consumer awareness has increased as to the potential dangers of artificial colors, many supplement companies have reduced or eliminated them all together from their formulas. You will undoubtedly find that many supplement companies will clearly state on their packaging or marketing materials that their product "contains no artificial colors."

If no such warning appears, check the label closely. A very popular brand of multivitamins targeted to people over the age of 50 lists "Red 40" and "Yellow 6" on their label[43] and there are countless other formulations that still include some of the 7 synthetic dyes listed above.

One particularly tricky aspect of spotting these artificial food dyes in both foods and supplements is that the names can be written in multiple ways. For instance, here are just some of the many ways you might find Red #40 listed on a label. (Note: The abbreviation C.I. stands for Colour Index):

- Red 40
- Red No. 40
- Red #40
- Allura Red
- Allura Red AC
- FD&C Red No. 40
- FD and C Red No. 40
- C. I. 16035
- C.I. Food Red 17

Savvy Shopper Tip:

Companies in the U.S. are required to list food dyes used in supplements on their labels. These synthetic colors provide no benefit other than aesthetics and have the potential to cause harm. Despite being approved as by the FDA, avoid supplements containing any of these artificial colors.

- FD&C Blue No. 1
- FD&C Blue No. 2
- FD&C Green No. 3
- FD&C Red No. 3
- FD&C Red No. 40
- FD&C Yellow No. 5
- FD&C Yellow No. 6

2 Titanium Dioxide

Titanium dioxide (TiO_2) is an insoluble white powder widely used in commercial and industrial products including paints, coatings, plastics, cosmetics, sunscreen, pharmaceuticals, and as a food and supplement additive. In foods and supplements it's prized for its whitening effects, lack of odor, no taste, good absorbency, and anti-caking properties.[44]

In 2006, the International Agency for Research on Cancer (IARC) concluded that there was *inadequate* evidence to state that titanium dioxide causes cancer in humans. It did conclude, however, that titanium dioxide is "possibly carcinogenic to humans by means of inhalation" (category 2b). It found inadequate evidence in humans but **sufficient evidence of cancer risk in animals** based on previous rat studies.[45]

A decade later, the European Union decided this same research met the criteria for titanium dioxide to be classified as a substance suspected of causing cancer (category 2) if inhaled.[46]

TiO_2 is produced and used in varying particle-size fractions, including nano particles. The increasing production of nano-sized TiO_2 has received growing concern in recent studies about the consequences of human exposure through direct contact in the environment.[47]

As stated in a 2021 animal study published in the *Journal of Nanobiotechnology*, "there is increasing evidence that nanoparticles are capable of entering the human body and inducing pathological damage in various organs, such as liver, kidney and brain etc."[48]

Because titanium dioxide is only used for aesthetic purposes (e.g., making tablets look pearly white), it seems unnecessary and counterproductive to good health to include it in a dietary supplement.

Savvy Shopper Tip:

Titanium dioxide serves no real purpose in dietary supplements beyond making a product look better. While the jury is still out on the potential harm for ingesting it, your safest bet is to avoid supplements that include it.

3 Preservatives

Preservatives are added to certain supplements to help main freshness and quality over time and to prevent degradation due to exposure to heat, light, and air. Antimicrobial preservatives may be used to inhibit the growth of bacteria, molds, fungi, or yeast.

Artificial preservatives like sulfites and nitrites can cause allergic reactions in some people. Sodium benzoate is a preservative that may magnify hyperactivity and ADHD in children and trigger and increase chances of asthma attacks in adults.[49]

Potassium sorbate is another popular additive for extending the shelf life of supplements. Unfortunately, it may lead to increased migraines, higher potassium levels (hyperkalemia), and allergic reactions such as itching, congestion, and abdominal pain.[50]

Many people have heard about the dangers of parabens in personal care products and cosmetics. But parabens are also often used as preservatives in pharmaceuticals and supplements. Common parabens in supplements include methylparaben, ethylparaben, propylparaben, and butylparaben and more than one paraben can be used in a single product.[51]

Safer, natural preservatives include vitamins A, C, and E, and amino acids such as methionine and cysteine.[52]

4 High Fructose Corn Syrup (HFCS)

Do a quick internet search of the health dangers of high fructose corn syrup and you can be reading for days. Just one issue is that it's almost always made with genetically modified corn. It may appear on a label as HFCS, isoglucose, maize syrup, glucose-fructose syrup, or glucose/fructose.

5 Artificial (Low-Calorie) Sweeteners

Sugar substitutes are chemicals added to food, beverages, and supplements (especially liquids, powders, and gummies) to give them a sweet taste without calories. There are six low-calorie sweeteners approved as food additives by the FDA:[53]

- Acesulfame-K (Sunett®, Sweet One®)
- Advantame (no brand names)
- Aspartame (Equal®, NutraSweet®, Sugar Twin®)
- Neotame (Newtame®)
- Saccharin (Sweet'N Low®, Sweet Twin®, Necta Sweet®)
- Sucralose (Splenda®)

While research studies are often cited as "inconclusive" into the long-term effects of artificial sweeteners, many health-conscious people choose to err on the side of caution and avoid sugar and artificial sweeteners altogether.

6 Artificial and Natural Flavors

When you see the word "flavor" on a food label, you have no clue what chemicals, carrier solvents or preservatives have been added to the food. For people with unusual food allergies or those on restricted diets, this can be a problem. And if you think that "natural flavors" are healthier than "artificial", they're not really all that different since natural flavors can still contain synthetic chemicals.[54]

7 Monosodium Glutamate (MSG)

While best known as an ingredient in Chinese food, MSG can turn up in dietary supplements. It has been linked with obesity, metabolic disorders, Chinese Restaurant Syndrome, neurotoxic effects, and detrimental effects on the reproductive organs.[55] Some alternative names for MSG are sodium glutamate, Accent, Zest, Ajinomoto, and Vetsin.

Savvy Shopper Tip:

Supplements can contain a whole host of less-than-healthy ingredients including artificial preservatives, HFCS, artificial sweeteners, MSG, and flavor enhancers. Read the other ingredients list closely and opt for brands that have few and ideally none of these risky ingredients.

Your Best Bet for Safety & Purity: Third-Party Testing

You've just learned about questionable ingredients that are supposed to be listed on a supplement's back label. But what about the contaminants that can be inherent within an ingredient itself? We're talking about genetically modified organisms (GMOs), pesticides, glyphosate, heavy metals, gluten, allergens, mycotoxins (mold), and more.

This is where third-party testing for purity comes into play.

One of the best indications of a brand's commitment to quality is their willingness to subject their product and/or manufacturing practices to scrutiny by an independent third party. The most transparent supplement companies will openly share their testing results with consumers.

Third-party testing is not a legal requirement and is an added financial investment that a company chooses to make. This likely means the supplement price will reflect this added cost. But as a consumer you're also getting added peace of mind that what's written on the outside of the bottle is actually what you're receiving. And that you're not getting harmful toxins and contaminants in your supplements.

Brands that invest in third-party testing will likely note "3rd-Party Tested" on the labels and/or marketing materials for all eligible products and should be readily able to produce information about the certification when asked.

There are a number of third-party testing companies that offer independent testing services. Here are some of the most well-known and respected.

Banner Substances Control Group (BSCG) Certified Drug Free®

BSCG (bscg.org) is one of the leaders in protecting athletes with a testing menu that includes more than 491+ banned substances in sport, prescription, over-the-counter, or illicit drugs. It covers drugs on the World Anti-Doping Agency (WADA) Prohibited List or banned in other drug testing programs like the NFL, MLB, NHL, NBA, WNBA, PGA, LPGA, MLS, ATP, WTA, CFL, FIFA, FINA, AFL, NRL, NASCAR, CrossFit, NCAA, military, law enforcement, first responder, vocational drug-testing programs, and more.

The BSCG Certified Drug Free® program is available to the dietary supplement, natural product, functional food, homeopathic, and medical product industries. They test finished products, ingredients, or facilities. BSCG also offers testing for consumer and animal products.[56]

Informed Choice

Informed Choice (choice.wetestyoutrust.com) is a global quality assurance program for dietary supplements. The presence of the Informed Choice quality mark on product packaging demonstrates to consumers that the product has been regularly tested for prohibited substances in sport and that the product was made in an environment with quality systems appropriate for the stringent demands of sports nutrition manufacturing.

Nutritional supplement products certified by Informed Choice undergo a rigorous pre-certification and post-certification process, consisting of four stages: product & manufacturing review, pre-certification sample testing, product certification, logo use & web listing, and post-certification requirements & testing.

Informed Sport

Informed Sport is a sister program to Informed Choice designed to test and provide certified supplements for elite athletes and drug tested personnel.

NSF International

NSF (nsf.org) provides independent testing, auditing, and certification services globally. The NSF label assures supplies, retailers, regulators, and consumers that it has reviewed a product to ensure it complies with specific standards for safety, quality, sustainability, or performance.

When it comes to dietary supplements, there are three main components of the NSF certification program:[57]

1. Label claim review to certify what's listed on the label is what's actually in the bottle.
2. Toxicology review to certify product formulation (Note: efficacy is not tested)
3. Contaminant review to ensure the product contains no undeclared ingredients or unacceptable levels of contaminants.

NSF Certified for Sport™

NSF offers a separate certification program which screens supplements for 280 substances banned by most anti-doping and professional sports associations as well as undeclared ingredients including stimulants, narcotics, steroids, diuretics, beta-2-agonists, masking agents, and other substances.[58] This certification also confirms that the product contains the ingredients and quantities shown on the label and does not contain harmful levels of contaminants such as heavy metals or pesticides.

Underwriter Laboratories (UL)

Underwriter Laboratories (ul.com) is a global leader in safety science. For the supplement industry, UL's quality assurance solutions include testing the identity, purity, strength, and potency of raw ingredients and finished products, independent and accredited Good Manufacturing Practice (GMP) audits, and quality inspections to help manufacturers achieve and maintain current Good Manufacturing Practice (cGMP) compliance.

U.S. Pharmacopeia (USP)

The USP Dietary Supplement Verification Program (usp.org) is a voluntary program open to manufacturers of dietary supplement finished products from around the world. Through a rigorous testing and auditing process, USP evaluates voluntarily submitted products against science-based quality standards – including federally recognized USP–NF standards of quality, purity, potency, performance, and consistency – and FDA current good manufacturing practices.

Other 3rd-Party Testing Laboratories

In addition to some of the big testing companies listed above there are many independent laboratory facilities that are also reliably able to test finished supplements for quality and purity. Some of the items you may see listed on a laboratory certificate of analysis include levels of:

- Pesticides
- Heavy metals (lead, mercury, arsenic, cadmium, and chromium)
- Glyphosate
- Gluten and other allergens
- Harmful bacteria and mycotoxins
- Absence of drugs

Savvy Shopper Tip:

3rd-party testing is not required by law and is an optional expense that some supplement companies choose to incur. Indications of 3rd-party testing by a legitimate testing organization (including providing test results when asked) is a strong indicator of a company's commitment to quality and excellent manufacturing practices.

Additional Considerations for Fish Oil

Throughout the *Supplements Revealed* series, multiple experts shared that fish oil was one of their top go-to supplements. They also emphasized the extreme importance of *quality* when selecting a brand of fish oil.

There are a couple of additional logos you can look for that will help ensure you're purchasing a high-quality fish oil or omega-3 product.

GOED

GOED (goedomega3.com) is the global organization for EPA & DHA omega-3s (marine, plant, or microbial). Its mission is to increase educate consumers about the importance of EPA and DHA omega-3s and ensure that members produce quality products that consumers can trust.

To have the right to display the GOED logo, a company must pay a membership fee, sign an affidavit that they will comply with the GOED Voluntary Monograph,[59] and adhere to GOED's Code of Ethics & Business Practices.[60] The Monograph is a strict quality standard that focuses on oxidative quality, environmental contaminants, and the measurement of EPA and DHA.

A searchable list of current GOED members can be found on their website at: https://goedomega3.com/members/list.

Marine Stewardship Council (MSC)

MSC (msc.org) is an independent non-profit organization which sets a standard for sustainable fishing. MSC certified products are separated from non-certified all along the supply chain. They are clearly labelled so they can always be traced to a certified sustainable source.

While seeing the MSC logo on a supplement label won't necessarily tell you about the quality of the fish oil in the bottle, it does show that the manufacturer cares about sustainability and the environment.

Savvy Shopper Tip:

When shopping for fish oil, look for the GOED and MSC labels which are both good indicators of a higher quality product.

CBD & Hemp

The CBD industry is highly unregulated which makes third-party testing and certifications even more important for your safety and peace of mind. Independent lab tests are intended to provide an unbiased analysis of a product's quality, purity, and potency. Testing results may show one or more of the following:[61]

- Cannabinoid profiles
- Terpene profiles
- Heavy metals
- Organic solvents
- Biological contaminants

Additionally, check to see if the brand owner is certified by the U.S. Hemp Authority.

U.S. Hemp Authority

The U.S. Hemp Authority (ushempauthority.org) is the industry's initiative to provide high standards, best practices, and self-regulation, giving consumers and retailers confidence in hemp and CBD products.

In order to display the seal, a grower, processor/manufacturer, or brand owner must successfully pass the third-party audit, execute the U.S. Hemp Authority® licensing agreement, and pay an annual licensing fee.

A list of certified companies can be found on their website at: ushempauthority.org/certified-companies.

Savvy Shopper Tip:

CBD is a highly unregulated industry. Look for 3rd-party testing results that verify exactly what's in the product you're buying.

USDA Organic

One of the most important considerations for many supplement shoppers is how "clean and pure" (pesticide and GMO-free) a supplement's ingredients are. For these shoppers, **the USDA Organic seal is one of the most important items to look for on a supplement label.**

The U.S. Department of Agriculture (USDA) oversees the program and protects the Organic Certified seal to ensure that those who use it are in full compliance. There are strict financial penalties for violations.

To qualify for the USDA organic certification, organic products must be produced using agricultural production practices that foster resource cycling, promote ecological balance, maintain and improve soil and water quality, minimize the use of synthetic materials, and conserve biodiversity. Products must be:[62]

- Overseen by a USDA NOP-authorized certifying agent, following all USDA organic regulations
- Produced without excluded or prohibited methods, (e.g., genetic engineering, ionizing radiation, or sewage sludge)
- Produced using allowed substances

When shopping for supplements, there are four distinct labeling categories for organic products to look for:[63]

- 100% Organic
- Organic
- "Made with" organic ingredients
- Specific organic ingredients indicated on the label

> *"Before you even get to the company, though, it's very easy if you look at a label, a supplement label, and the first thing you want to look for is organic. A lot of good supplements though, are not certified organic, but you want to look at the ingredients. You want to make sure that there's no synthetic vitamins in there."*
>
> **Dr. Ed Group**
> **Episode 4, *Supplements Revealed***

100 Percent Organic

This is the toughest standard to achieve as the product must be made up of 100 percent certified organic ingredients (excluding water and salt which are considered natural). The label must include the name of the certifying agent and is permitted to include the USDA Organic Seal and/or the 100 percent organic claim.

Organic

This is the next most stringent category with 95%+ of the total product and ingredients being organic. A maximum of 5% of ingredients are permitted from the "allowed" portion of the National List of Allowed and Prohibited Substances. The label must include the name of the certifying agent and may use the USDA Organic Seal and/or the organic claim.

Note: You're unlikely to find capsule supplements that are labeled as 100% USDA Organic or USDA Organic. That's because the empty capsules make up more than 5% of the product by weight and manufacturers have been waiting for a USDA Organic capsule to become available. Read the ingredient list closely to see how many of the individual ingredients are organic and make your decision based on that.

"Made With" Organic Ingredients

This designation is for multi-ingredient products with at least 70 percent of the product coming from certified organic ingredients. The remaining ingredients, while not required to be organic, cannot be produced using methods excluded by the USDA (genetically engineered), and must be on the allowed portion of the National List. The USDA organic seal cannot be used on the product, and the final product cannot be represented as organic. However, the principal display panel is able to list up to three organic ingredients or ingredient categories. Example: Made with organic _____, _____, and _____.

Specific Organic Ingredients Listed on the Label

This would apply to multi-ingredient supplements with less than 70 percent organic ingredients. The label can note which ingredients are certified organic in the ingredients list and the percentage of organic ingredients. These supplements cannot display the USDA Organic seal nor use the word "organic" on the principal display panel.

Note: As mentioned above, the USDA has a number of authorized certifying agents who evaluate products on behalf of the USDA Organic program.[64] You may also see logos by these certifiers on some dietary supplements.

Savvy Shopper Tip:

USDA Certified Organic is your best bet for avoiding pesticides and genetically modified organisms (GMOs) in your whole food supplements. Even if a supplement doesn't display the USDA Organic label on the front principal display panel, read the ingredient label closely to see which ingredients (if any) are listed as organic.

What Does "Made With Whole Foods" and "Natural" Really Mean?

There are two common phrases you may see on supplement labels and in promotional materials that sound promising, but that don't necessarily mean safer or better for your health.

The first is the term **"natural."** As noted on the FDA website:[65]

"Although the FDA has not engaged in rulemaking to establish a formal definition for the term "natural," we do have a longstanding policy concerning the use of "natural" in human food labeling. The FDA has considered the term "natural" to mean that nothing artificial or synthetic (including all color additives regardless of source) has been included in, or has been added to, a food that would not normally be expected to be in that food. However, this policy was **not intended to address food production methods, such as the use of pesticides**, nor did it explicitly address food processing or manufacturing methods, such as thermal technologies, pasteurization, or irradiation. The FDA also **did not consider whether the term "natural" should describe any nutritional or other health benefit.**"

In other words, there's a lot left up for interpretation when you see "natural" – which is why you still need to read the ingredient list closely.

Another descriptor you may see on supplement labels and marketing materials is **"made with whole foods."** In some cases, this means just what it implies… that the entire product is made with real plants.

But it could just as easily mean that anywhere between 5% and 95% of the supplement is made with synthetic ingredients. Another question that isn't addressed is how was that whole food plant material grown? Was it with pesticides and GMO seeds? If the bottle sports the USDA Organic seal, then you know it wasn't. Otherwise, it's impossible to tell simply from the phrase "made with whole foods." You need to read all the ingredients carefully for more information and reach out to the company for clarification, if necessary.

Savvy Shopper Tip:

Terms like "natural" and "made with whole foods" have no standardized or enforceable definition when it comes to dietary supplements and can almost mean anything the company wants them to mean. Read the ingredient list closely and feel free to ask for more information.

Fermentation & Sprouting

One of the primary goals of consuming any food or supplement is so your body absorbs the nutrients (vitamins, minerals, etc.) contained within. You may have heard the expression "It's not what you take… it's what you absorb." The meaning behind this statement is that you could be popping multivitamins all day long but if your body doesn't actually absorb any of the vitamins or minerals, you're basically wasting your time and money.

One excellent way to increase the bioavailability of both foods and whole food supplements is by sprouting and/or fermenting the ingredients before turning them into supplement form.

Bioavailability is the potential for uptake of a substance by a living organism.[66]

Sprouting

Seeds are known for their nutritional density, but did you know they become even healthier when they're sprouted? Seed germination (sprouting) makes seeds more bioavailable and can drastically boost their nutrient content.

Sprouting is especially important because it deactivates certain "anti-nutrients" in seeds that can inhibit nutrient absorption and even rob your body of its own nutrient stores. Anti-nutrients include things such as phytic acid, enzyme inhibitors, lectins, saponins, and polyphenols.

If you've ever felt like your body doesn't agree with seeds (or beans and nuts), it could be because of these anti-nutrients, which are effectively removed during the sprouting process.

Fermentation

Fermentation is another way to increase the bioavailability of plant foods and make them even more nutritious.

You may already be aware that fermenting foods can have tremendous benefits for digestion. This is because foods that are correctly fermented contain probiotics (beneficial bacteria) which can support good gut health.

Fermentation can also provide some distinct benefits in terms of nutrition and ease of digestion. Fermentation is a type of "pre-digestion" where the sugars and starches in a food are broken down by bacteria. These are usually the *Lactobacillus* and *Bifidus* strains, or nutritional yeasts. In some cases, fermentation of certain plant foods even forms phytonutrients that weren't there before.[66]

Another way that fermentation is beneficial is in increasing the antioxidants in plant foods and releasing them so they can combat free radicals. (Free radicals break down/age the body and lead to disease and decay.) A Korean study published in the journal *Food Chemistry*[67] highlighted three key benefits related to the fermentation of plant foods and antioxidants:

- Antioxidative activity of plant-based food improved by fermentation
- Release of antioxidant compounds increased by fermentation
- Liberation or synthesis of antioxidant compounds increased by fermentation

As noted in the study, "fermentation induces the structural breakdown of plant cell walls, leading to the liberation or synthesis of various antioxidant compounds. These antioxidant compounds can act as free radical terminators, metal chelators, singlet oxygen quenchers, or hydrogen donors to radicals."

Savvy Shopper Tip:

While not very common due to the added time and care required, you can find some supplement brands that offer sprouted or fermented ingredients in their whole food supplements. Note: This is not an option for synthetic supplements which are not made from whole foods.

6 Special Considerations When Shopping for Supplements

Many people have particular needs when choosing a supplement product that meets their personal situation. Here are six key considerations that may apply to you along with advice on how best to address these concerns when supplement shopping.

1 Allergens

If you have food allergies, you need to pay extra close attention to any supplement ingredient list and examine both the "Supplement Facts" label and the "Other Ingredients" list.

The FDA requires manufacturers to clearly list the 8 (soon to be 9) major food allergens in plain English on the ingredient label.[68] These are:

- Milk
- Eggs
- Fish
- Shellfish
- Tree nuts
- Wheat (see more on gluten below)
- Peanuts
- Soybeans
- Sesame (coming January 1, 2023)
- As well as protein derived from one of these foods

Savvy Shopper Tip:

If you have allergies, always read supplement labels and "other ingredients" sections carefully. If in doubt, contact the supplement company before taking.

Many supplement labels or marketing materials will call attention to the fact that their product does not contain some or all of these key allergens. However, if you're allergic to less common foods or botanicals (e.g., kiwi, beets, alfalfa, aloe, etc.) or any supplement excipients, you will have to pay extra close attention to ingredient lists. If unsure, contact the company *before* taking any new supplement.

2 Gluten

Gluten is a type of protein found in wheat, barley, rye, and crossbreeds of these grains. Avoiding gluten in products has become somewhat trendy in recent years. But for people with severe gluten sensitivity up to and including celiac disease, inadvertently being exposed to gluten can cause short-term pain and discomfort and serious long-term health issues through repeated gluten exposure.

Celiac disease is a chronic genetic inflammatory disorder of the small intestines. Ingesting gluten stimulates the production of antibodies and inflammatory cells, which results in damage to the tiny finger-like protrusions called villi that line the small intestines. **The only treatment for celiac disease is complete abstention from products containing gluten.**[69]

There are many foods/dietary supplement ingredients which are naturally free from gluten including all fruit, vegetables, milk, meat, and nuts. Products that don't naturally contain gluten are under no obligation to state that on their label.

According to FDA guidelines, any food products (including dietary supplements) that carry the label "gluten-free", "no gluten", "free of gluten", or "without gluten" must contain less than 20 parts per million (ppm) of gluten. This level is the lowest that can be reliably detected in foods using scientifically validated analytical methods.[70]

A dietary supplement can use these various "no gluten" labels if:[71]

- It is inherently gluten-free, meaning it does NOT contain wheat, rye, barley or their crossbred hybrids like triticale (a gluten-containing grain) OR
- It does NOT contain an ingredient that is derived from a gluten-containing grain that has not been processed to remove gluten (e.g., wheat flour) OR
- It does NOT contain an ingredient derived from a gluten-containing grain that has been processed to remove gluten (e.g., wheat starch), if the use of that ingredient results in the presence of 20 parts per million (ppm) or more gluten in the food.

Some food and supplement manufacturers choose to go one step further and have their products verified by the Gluten-Free Certification Organization (GFCO). **These independently verified products are entitled to carry a mark (logo) which shows that product is certified gluten free.** This international certification program is overseen by The Gluten Intolerance Group (GIG), a 501(c)(3) non-profit organization founded in 1974.

Savvy Shopper Tip:

The Certified Gluten-Free logo should be a reliable indication that a supplement is safe for all people with gluten sensitivity, up to and including people with celiac disease. For supplements carrying a label of "gluten-free", "no gluten", "free of gluten", or "without gluten", you may wish to check with the manufacturer to make absolutely certain there's no risk of cross-contamination in the production facility if you're highly sensitive to gluten. For supplements with no mention of gluten, check the ingredient list closely and contact the manufacturer to inquire.

As GFCO is in the process of rebranding their logo, you may see one of these two marks on products:

Old Mark

New Mark

3 Halal

Halal means "permissible" according to Quran rules. Halal certification is a voluntary process which ensures food and dietary supplements have been produced according to these rules and therefore may be lawfully consumed by Muslims.[72]

All raw materials and the entire manufacturing process must be identified as Halal in order to qualify for Halal certification. Products that meet these requirements as determined by a certification body will generally indicate "Certified Halal" and/or display a Halal symbol on their products and/or marketing materials.

Savvy Shopper Tip:

If you strictly follow the rules of the Quran, check that a supplement is "Certified Halal" prior to consuming.

4 Kosher

Kosher refers to a set of intricate biblical laws that detail the types of food that a Jewish person may eat and the ways in which it may be prepared. To be certified Kosher, all ingredients in a product – including the process of preparing the product – must be certified for orthodox Kosher compliance.[73] Because dietary supplements fall under the umbrella of food, Jewish consumers may look for Kosher certification on their dietary supplements.

There are hundreds of Kosher certification agencies located around the world.[74] To become certified a supplement manufacturer works with a rabbinical expert to ensure that products are made in accordance with Kosher law. The certifying agency tracks and monitors this status through record-keeping of processes and ingredients, as well as periodic audits to the manufacturing facility, and more.[75]

Savvy Shopper Tip:

If you strictly adhere to Kosher law, check that a supplement is "Certified Kosher" prior to taking.

Supplements that have gone through a certification process will usually indicate "Certified Kosher" on their label and/or in their marketing materials.

5 Supplements for Body Builders and Other Athletes

Supplements can play an important role in the life of an athlete in helping them meet their nutritional requirements and supporting recovery after a workout or competition. Some of the advertised roles of supplements geared to athletes and body builders include:

- Improving athletic performance
- Providing extra energy
- Helping to replenish lost fluids and electrolytes
- Improving or reducing recovery time between training sessions
- Helping to manage weight (bulking up or slimming down)

While there are undoubtedly many high-quality supplements on the market that support these goals, athletes need to be extra vigilant when it comes to supplement safety. Not only for their own health and wellbeing, but also so they aren't disqualified from competition for violating anti-doping rules.

This is a very real concern for "clean" athletes who are intentionally avoiding taking any banned substances. According to data from the Australian Sports Anti-Doping Authority, **an estimated 50% of all reported doping violations are related to supplements.**[76]

A 2020 survey of consumer supplement use found that sports nutrition was one of three areas where consumers have the lowest confidence in the safety and quality.[77] It so happens that this mistrust is not unfounded.

An analysis of FDA supplement warnings from 2007-2016 identified weight loss and muscle-building supplements (along with sexual enhancement supplements) as being at **highest risk for adulteration with undeclared, unapproved pharmaceutical ingredients.**[78]

An emerging area where athletes need to be cautious is "research only" compounds. These are products which look like dietary supplements but contain performance-enhancing pharmaceutical ingredients. Steer clear of any products labeled "for research only", "research chemical", or a similar descriptor and that do not have a supplement facts panel.

Savvy Shopper Tip:

Sports nutrition supplements carry a greater risk for adulterated ingredients. To minimize the risk of taking a tainted or banned ingredient that could bar you from competition:

- Consult with knowledgeable trainers, coaches, and healthcare professionals when choosing the right dietary supplements for your specific needs as an athlete or body builder.
- Be wary when purchasing over the internet from unknown companies. Stick with trusted brands and retailers.
- Look for quality seals and third-party sport certifications such as NSF Certified for Sport™ or BSCG Certified Drug Free® (see pages 21-22 for more info).
- Never take a supplement that doesn't have a supplement facts panel.

6 Vegetarian & Vegan

If you're vegan or vegetarian, you likely have your own firm list of what you do and don't want to consume when it comes to animal-related products. Some vegetarians are okay with eggs, dairy, or honey, for example, while others totally shun any ingredients of animal origin.

The good news is that the majority of vitamins, minerals, and herbal supplements are not going to present any problems because they contain no animal-based material. The not-so-good news is that there are some tricky ingredients

For example, vitamin D can come from sheep's wool and some probiotics are grown in a dairy base. Sweeteners can be filtered with bone char or "other" ingredients may have been tested on animals.

Many supplement brands will do their own evaluation of their ingredients and make notations such as "vegan-friendly" or "vegetarian-friendly" in their product information. This specific advisory, along with a careful read of the ingredient list, will be enough to assure many vegetarians and vegans that a product is appropriate for them to consume.

Some supplement companies, however, choose to take the next step and invest in having their products Certified Vegan. The **Certified Vegan Logo** is a registered trademark and identifies products do not contain meat, fish, fowl, animal byproducts (including silk or dyes from insects), eggs or egg products, milk or milk products, honey or honeybee products, or are clarified or finished with any animal products. Products and all of their constituent parts must also not have been tested on animals.[79]

Savvy Shopper Tip:

Many supplement companies will evaluate ingredients and note that they are "vegetarian-friendly" or "suitable for vegans." For many consumers this is enough information. Strict vegans may choose to only purchase products with the Certified Vegan logo. Just be aware that you may be excluding products which are completely vegan and the companies simply haven't paid for the optional certification.

Supplement companies pay an annual licencing fee to use the Certified Vegan Logo. This is another cost to the company that may get passed on to consumers.

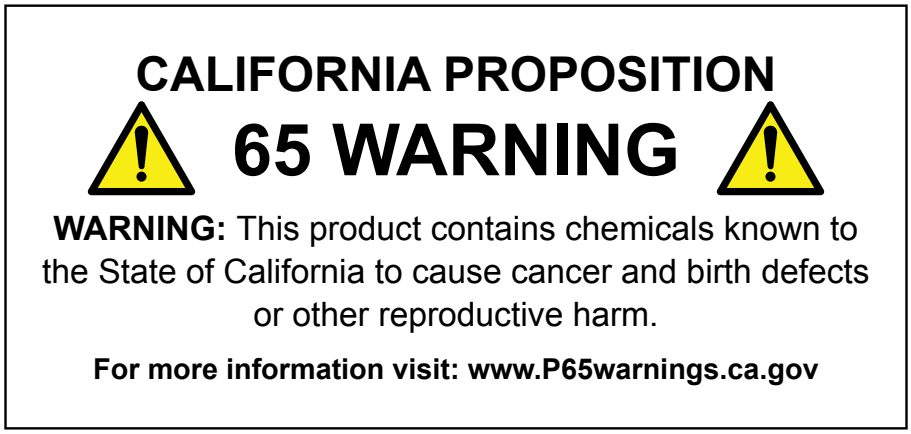
Proposition 65: Something to Be Concerned About?

If you're a resident of California, you're likely very aware of the ubiquitous Proposition 65 warning labels that appear on all types of products, job sites, and in-store signage. (They're so common that there's a joke that "everything causes cancer in California.")

Proposition 65 (aka Prop 65) came into effect in late 1986 and requires businesses to provide warnings to Californians about exposure to chemicals that can cause cancer, birth defects, or other reproductive harm. This list of chemicals (updated annually) has grown to include approximately 900 chemicals since it was first published in 1987.[80]

With new regulations in 2018, the Prop 65 warning labels must now list:

- The name of at least one listed chemical that prompted the warning.
- The Internet address for the government's new Proposition 65 warnings website: www.P65Warnings.ca.gov.
- A triangular yellow warning symbol.



If you live outside California and purchase supplements online, you may see Prop 65 warnings on a website or receive supplements containing a Prop 65 warning label. This is because companies selling products over the internet that can be purchased by Californians are legally obligated to comply with Prop 65. For many companies, it's too difficult logistically to have totally separate packaging and shipping just for California, so everyone gets the label – no matter where they live.

While these Prop 65 warning labels look rather scary, they aren't necessarily a cause for concern. Here's why...

The Office of Environmental Health Hazard Assessment (OEHHA) which oversees Prop 65 has established "safe harbor" levels for many of the Prop 65 chemicals.[81] A business does not need to provide a warning if exposure to a chemical occurs below these pre-determined safe harbor levels.

Food Is Exempt From Prop 65 Warnings… Whole Food Supplements Are Not

OEHHA recognizes that certain chemicals and substances such as lead occur naturally in foods, either as an inherent part of composition, through the absorption from the soil, or for other reasons. Root vegetables such as carrots, sweet potato, beets, and radishes take up the most lead from soil, followed by leafy greens.

These and other perfectly healthy **foods are exempt from Prop 65 warnings but when these exact same foods are turned into supplement ingredients, they're no longer exempt.**

This is a situation which many supplement companies feel is unfair. They can comply with all federal and international safety standards set by the FDA, Environmental Protection Agency (EPA), and the World Health Organization (WHO), and still have to add the Prop 65 warning label.

Lead Is a Key Reason for Prop 65 Labels on Supplements

The Prop 65 safe harbor limit for lead in supplements is only 0.5 mcg (0.5 ppm). Yet according to the EPA, *naturally occurring* levels of lead in soil can range from 50 parts per million (ppm) to 400 ppm[82] in low pollution areas. (In high pollution areas, such as near factories and mining sites, it can be up to 10,000 ppm.)

In national tests of common food items, many foods far exceed the supplement safe harbour limits. For example, spinach is 14 times the safe harbor limit with 0.007 mg/kg (7 ppm) of lead and whole wheat bread is 26 times the limit with 0.013 mg/kg (13 ppm).[83]

[For reference, a level of 1 part per million corresponds to 1 milligram (mg = 1/1000 of a gram) of lead in one kilogram of material, or to 1 microgram (mcg = 1/1,000,000 of a gram) of lead in 1 gram of material.[84]]

When compared with the quantity of lead that appears naturally in healthy foods and drinking water, this low safe harbour threshold can be nearly impossible for whole food supplements to meet.

When Supplements Don't Have Prop 65 Warning Labels

Just because you don't see a Prop 65 warning label on a product (especially one you purchased online), that's not a 100% guarantee that it complies with California's Prop 65 safe harbor limits either. Many smaller companies are either ignorant of the laws or choose to risk punishment rather than scare away potential customers with a warning sticker.

Savvy Shopper Tip:

A whole foods supplement manufacturer can meet or exceed federal and global safety standards and still be forced to place a Prop 65 sticker on their supplement – even when the exact same foods in the supplement do not require a warning.

If you see a product with a Prop 65 sticker and are concerned, contact the company to ask what ingredient(s) failed and if they have other test results they can share with you.

Experienced a Negative Reaction to a Supplement? Here's How to Report It

We hope this guide has provided you with plenty of additional guidance and resources so that you have only positive, health-enhancing experiences with your dietary supplements.

Despite all your best precautions, however, it's still possible that you may experience an adverse event due to one supplement alone, a combination of supplements, or interactions between drugs and supplements. What do you do then?

It's important to pay attention to how you feel and listen to your body. Tell your healthcare provider about supplements you're taking or planning on taking – especially if you're on any prescription or over-the-counter medication. If you notice any negative changes in your health status, seek the medical care you need.

"Adverse events" are unfavorable or unusual reactions, effects, or illnesses that can occur with the use of a dietary supplement (just as they can with over-the-counter and prescription medications).

The FDA urges consumers, health professionals, and industry members to report any serious health-related reactions or illnesses to the joint FDA/National Institutes of Health Safety Reporting Portal so they can look for trends. **You should also report your bad reaction to any dietary supplement to the company/manufacturer.**

Serious reactions or illnesses may include:[85]

- Itching, rash, hives, throat/lip/tongue swelling, wheezing
- Low blood pressure, fainting, chest pain, shortness of breath, palpitations, irregular heartbeat
- Severe, persistent nausea, vomiting, diarrhea, or abdominal pain
- Difficulty urinating, decreased urination
- Fatigue, appetite loss, yellowing skin/eyes, itching, dark urine
- Severe joint/muscle pain
- Slurred speech, one-sided weakness of face, arm, leg, vision (stroke)
- Abnormal bleeding from nose or gums
- Blood in urine, stool, vomit, or sputum
- Marked mood, cognitive, or behavioral changes, thoughts of suicide
- Visit to Emergency Room or hospitalization

13 Rules for Buying the Best Dietary Supplements for You

As a consumer you have what can seem like endless choices when it comes to buying supplements. So how do you actually pick a good one?

Here are 13 guidelines for buying a great-quality supplement that will enhance your health… not harm it.

13 Don't Expect Quick Fixes

Dietary supplements aren't drugs and taking something only a couple of times and expecting an immediate or dramatic response isn't giving it a fair chance to work. Remember that supplements are meant to *supplement* other healthy lifestyle choices..

Take your supplement as directed and give it a chance to work before tossing it or sticking it in a cupboard and moving on to something else. (Of course, if you experience a negative reaction, discontinue use immediately and consult your healthcare provider.) Sometimes you'll only realize how well a supplement has been working if you stop taking it after a while and feel the difference.

12 Beware of Over-the-Top Claims

That old adage of "if it sounds too good to be true, it probably is" is certainly true when it comes to dietary supplements. Companies that make big promises or claim that a supplement will treat, prevent, cure, or mitigate a disease are breaking the law and are likely fly-by-night operations that are putting profits ahead of your health and safety.

11 Look for a Supplement Facts Label

Athletes or anyone who undergoes drug testing for work (e.g., military personnel & law enforcement) need to be extra cautious with this one. Performance-enhancing drugs may appear to be dietary supplements but will lack the supplement facts panel which is required on all dietary supplements. Beware of anything labeled "for research only", "research chemical", or similar which can be a way for unscrupulous manufacturers to try and skirt FDA rules while selling illegal drugs in the supplement sphere.

For any supplements that you're considering buying online, if you can't see the supplement label or ingredient list, that's a red flag and it's best to steer clear completely.

Here's an example of a legitimate supplement label with all required information provided.

Suggested Use: Adults take two capsules daily with 8 ounces of water or juice.

Supplement Facts

Serving Size 2 Capsules Servings Per Container: 30

	Amount Per Serving	%DV*
Fermented Mushroom Mycelium Complex Blend Organic Turkey Tail Mushroom Mycelium (*Trametes versicolor*), Organic Chaga Mycelium (*Inonotus obliquus*), Organic Shiitake Mushroom Mycelium (*Lentinula edodes*), Organic Maitake Mushroom (*Grifola frondosa*), Organic Cordyceps Mycelium (*Cordyceps militaris*), Organic Lion's Mane Mushroom Mycelium (*Hericium erinaceus*), Organic Reishi Mushroom Mycelium and Fruit Body (*Ganoderma lucidum*)	700mg	**
Fermented Kelp Blend Organic Sprouted Purple Maize (seed), Organic Kelp	240mg	**

*Percent Daily Value based on a 2,000 calorie diet. **%Daily Value (DV) not established.

Other Ingredients: Plant Cellulose (capsule)
CAUTION: As with any dietary supplement, consult your healthcare practitioner before using this product, especially if you are pregnant, nursing, or are otherwise under medical supervision. Do not use if product has been opened or tampered with in any way. **Keep out of reach of children.**

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

10 Be Extra Cautious With the 3 Most "Dangerous" Categories of Supplements

A 2018 review published on the *Journal of American Medicine (JAMA)* website[86] studied FDA statistics from 2007 to 2016 and found that the greatest risk of adulterated supplements (ones containing unapproved pharmaceutical ingredients) came from 3 categories of supplements:

- Sexual enhancement
- Weight loss
- Muscle building

What are the risks of adulterated supplements? According to the study authors, "the potential to cause serious adverse health effects owing to accidental misuse, overuse, or interaction with other medications, underlying health conditions, or other pharmaceuticals within the supplement."[87]

9 Is Anyone There to Help You?

Is there a company website behind that product you're considering? Do they provide at least one (and ideally more than one) way to contact them? If you do contact the company and ask a question… does anyone get back to you with an answer? If the answer to any of the above is "no," then it's best to leave that bottle on the shelf or in your online cart and purchase from a company that will be there to support you post-purchase.

8 Is Your Satisfaction Guaranteed?

Closely related to # 9 is… does the company stand behind the products they're selling? Are they willing to give you your money back if the supplement doesn't work as intended? If they don't believe in the quality and efficacy of their own products, then why should you?

7 Big Is Not Always Better… but You Want Big Enough

The bigger the company, the more diligent they need to be with following all FDA and FTA rules. However, the mass-market supplement brands which can be found lining grocery and drug store shelves are also more likely to be produced from low-cost synthetic ingredients instead of ingredients made from more expensive whole foods and botanicals.

One the other end of the spectrum is tiny, fly-by-night companies which pop up on the internet with a one-page website selling the latest "wonder" product. Then there's those supplements imported from overseas and sold in tiny shops with packaging that doesn't meet FDA guidelines. There's no guarantee that what's contained in any of these products is legal or safe.

Your best bet lies in a company that falls somewhere in between. One that makes products with ingredients that come from nature; the company is big enough that they're following all mandated health and safety guidelines (plus going above & beyond), with a demonstrated commitment to quality, 3rd-party testing, and customer satisfaction.

6 Are They a Good Corporate Citizen?

This one isn't important to everyone, but it speaks to a company's corporate values and how committed they are to doing good in the world. Is the brand you're supporting with your hard-earned dollars helping others in some way? Companies that give back to charitable organizations such as Vitamin Angels demonstrate that they're not just about the bottom line.

5 You Get What You Pay For

Just about everyone loves a bargain, but if a particular supplement brand is way cheaper than its competitors… you should be suspicious and do a little digging to find out why.

Sourcing quality ingredients and adhering to good manufacturing practices takes time, effort, and resources which should be reflected in the final price. There are lots of places where cheap may serve your needs just fine. The supplements you're taking to enhance your health likely isn't one of them.

4 Who's Checking Their Work?

Third-party seals and certifications are one way that companies demonstrate a commitment to producing quality products. It's an added cost to the supplement company to undergo this third-party scrutiny of their manufacturing process and/or to have the end product tested for purity.

Check the packaging or marketing materials for a seal (logo) from third-party certifiers such as NSF International, UL, USP, BSCG Certified Drug Free, Informed Choice, Banner Substances Control Group, or other legitimate certifying bodies.

Absence of third-party testing doesn't necessarily mean a product is poor quality, but the presence of one or more 3rd-party seals is definitely a good sign.

3 Are the Ingredients Organic and Non-GMO?

If you're someone who sees the value in buying organic food, you very likely want that same freedom from pesticides and genetically modified organisms (GMOs) in your supplements.

There's a strong case for organic supplement ingredients being even more important than organic food. After all, a whole food supplement is plant material that's been greatly condensed. If the plants were sprayed with poison… those poisons will be condensed along with the plants into the supplements.

The most recognized organic symbol is USDA Organic certification. In order for a supplement to be permitted to display this seal, it must be at least 95% organic by weight. (Note: Most capsule supplements won't be marked as USDA Organic as the capsule itself isn't organic. Check the individual ingredients and see if they're listed as organic).

Be aware too that not every supplement ingredient is available in organic or even eligible to be classified as organic. For example, minerals and digestive enzymes can't be certified organic as they don't grow from a seed in the ground.

2 Check the "Other Ingredients" Panel for Ingredients You Don't Want or Need

Is there a long list of "other ingredients" that includes things like artificial colors, titanium dioxide, flavorings, fillers, preservatives, added sugar, sodium, MSG, etc.?

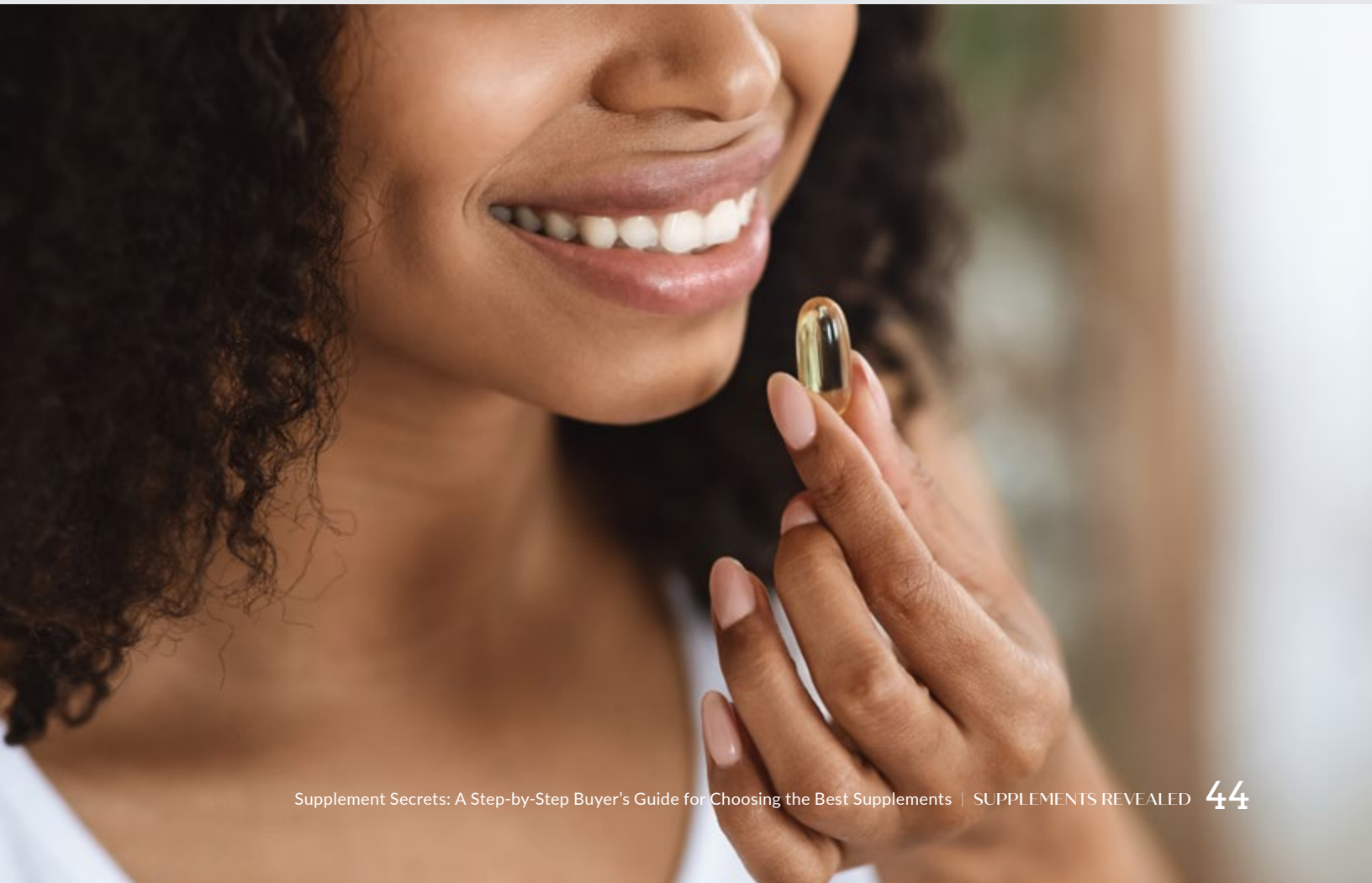
More and more companies are realizing that consumers don't want these harmful compounds in their supplements and will note key points such as "doesn't contain artificial colors or flavors" or "preservative-free." However, it's still up to you to read the label closely to ensure they aren't distracting your attention away from other unwanted ingredients.

1 Do You Trust the Choice You've Made?

At the end of the day, you are responsible for making the decision about what goes in your body. Do you feel good about the supplement you've chosen (or that a healthcare practitioner recommended for you)?

If you're wary about the company or the product, don't really understand why you're taking it, or something just feels "off," then there's a good chance this isn't the right supplement for you.

Maybe you just need to do a little more homework or seek guidance from your healthcare provider so you have more information, but you are the ultimate authority on your own body… so trust your instincts.



Dietary Supplement Evaluation Form

If you're someone who likes to do their homework, here's a handy checklist you can use when evaluating any new supplement that you're considering taking. While this checklist isn't exhaustive, it can help you keep track during your supplement research process.

Supplement (Product) Name:

_____

Company/Brand Name:

_____

Format:

- ☐ Capsule
- ☐ Powder
- ☐ Tablet
- ☐ Chewable
- ☐ Gelcap
- ☐ Gummie
- ☐ Liquid
- ☐ Other: _____

Country of Manufacture:

_____

USDA Certified Organic?

☐ Yes ☐ No

Certified Organic Ingredients?

☐ Yes ☐ No

Provides a Supplement Label?

☐ Yes ☐ No

Company Donates to Charity?

☐ Yes ☐ No ☐ Don't Know

Contains Common Allergens?

- ☐ Milk
- ☐ Eggs
- ☐ Fish
- ☐ Shellfish
- ☐ Tree Nuts
- ☐ Wheat
- ☐ Peanuts
- ☐ Soybeans
- ☐ Other _____
- ☐ None

Contains Other (Personal) Allergens?

☐ Yes ☐ No

If yes, what ingredients?

_____

_____

Other Concerns (if applicable):

Certified Kosher	☐ Yes	☐ No	☐ n/a
Certified Halal	☐ Yes	☐ No	☐ n/a
Gluten-Free	☐ Yes	☐ No	☐ n/a
Tested for Athletes	☐ Yes	☐ No	☐ n/a
Certified Vegan	☐ Yes	☐ No	☐ n/a
3rd-Party Tested for Heavy Metals, Pesticides, GMOs	☐ Yes	☐ No	☐ n/a

"Other Ingredients" Section Contains Items of Concern?

Fillers, additives, artificial flavors, colors, preservatives, yeast, soy, added sodium, sugar or starch:

☐ Yes ☐ No

Ingredients of concern:

_____

_____

Our Approved Supplements

Armed with the information in this step-by-step guidebook, you now have the most important details for choosing the safest and highest quality supplements.

We've also done a deep dive into the market to identify some of the best supplement products available. As a bonus we've added some skincare recommendations because what you put on your skin is as important as what you put in your body.

All of these products meet our extremely high standards including extensive lab testing and 3rd-party verification for quality and safety.

Organixx® Clean Sourced Collagens™

This powerful anti-aging protein supplement reduces the appearance of fine lines and wrinkles, eases joint discomfort, and much more.

Collagen is the literal glue that keeps our body, tissue, and bones held together and functioning right. But unfortunately, as we age our bodies produce less collagen – especially after age 30 and menopause.

This blend combines multiple types of cleanly sourced collagen together with Vitamin C and important cofactors to restore lost collagen – and promote better joints, younger skin, and more.

See the difference when it comes to Organixx® Clean Sourced Collagens™ and what it can do for you at:
https://supplementsrevealed.com/OX-Collagen

Organixx® Turmeric 3D™

This turmeric blend is a powerful antioxidant and anti-inflammatory supplement that supports healthy, pain-free joints.

Maximizing the natural potency of turmeric is critical for optimal effect. The fermentation process that Organixx delivers with their organic turmeric is unmatched – and eliminates the need for black pepper or piperine.

In every serving, you also get Vitamin D3, organic KSM-66® Ashwagandha root extract, and organic ginger – all natural anti-inflammatories.

See what Organixx® Turmeric 3D™ can do for you at:
https://supplementsrevealed.com/OX-T3D

Organixx® Magnesium 7™

Full-spectrum magnesium combining 7 forms of elemental magnesium.

Magnesium is one of the most important nutrients in the body. Without it you can suffer from a wide range of health issues – poor sleep, low energy, brittle bones, high blood pressure, migraines & headaches, slow metabolism, muscle aches, and so much more.

A magnesium supplement is a simple answer to these problems. But which type to take?

Magnesium 7 is a potent blend of 7 forms of magnesium – every kind your body needs to function properly. Find out more at:

https://supplementsrevealed.com/OX-Magnesium

AnnieMak Restore Vitamin C Serum

Achieve radiant, youthful skin with ingredients that are clinically proven to repair skin and reduce wrinkles.

This powerful Vitamin C serum has the highest concentration of Vitamin C in the industry (26%. It quickly speeds skin cell turnover – to wipe away old damaged cells and restore luminous, smooth, and even-looking skin.

Get more information about Annie Mak Restore Vitamin C Serum at:

https://supplementsrevealed.com/AM-Vitamin-C-Serum

AnnieMak Reverse Anti-Aging Serum

Smooth wrinkles, fade dark spots, and promote a beautiful satin appearance.

This potent anti-wrinkle serum is built on the perfect two-nutrient combination of organic tremella mushroom and argan plant stem cells. Each supports cellular structure and promotes a luminous, smooth, and even-looking complexion.

7 other potent anti-aging ingredients help penetrate the skin's surface to keep it hydrated and radiant – while minimizing wrinkle depth and appearance.

See what Reverse Anti-Aging Serum from Annie Mak can do for you at:

https://supplementsrevealed.com/AM-Anti-Aging-Serum

Heal-n-SOOTHE®

Heal-n-SOOTHE® combines systemic enzymes with 12 powerful extracts found in mother nature, including Turmeric, Bromelain, Papain, Boswellia, Rutin, Ginger, and more!

Heal-n-SOOTHE® has been trusted around the world for over 50 years. Why?

It's a Systemic Enzyme Therapy that supports a healthy inflammatory response – for better joint comfort, flexibility, and mobility. Having balanced levels of inflammation-causing substances in your body is important for maintaining a healthy heart, a healthy brain, and freedom from chronic pain.

See if Heal-n-SOOTHE® is right for you at:

https://supplementsrevealed.com/HealNSoothe

Cardio Miracle

Rejuvenate your body from within with this blend of 50+ ingredients for increased endurance, improved heart health, and more.

Cardio Miracle is a scientifically formulated, ratio-balanced delicious drink that is based on research that won the 1998 Nobel Prize for Medicine.

This formula contains 50+ ingredients including L-Arginine AKG, L-Citrulline, Ornithine, Carnitine, Taurine, Ribose, Vitamin D, Antioxidants, Organic Beet Root Powder, Hawthorn Berry, Watermelon Extract, and Astrigin...

Take charge of your health with Cardio Miracle today at:

https://supplementsrevealed.com/CardioMiracle

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