



# Dietary supplements

A clinical guide  
for practitioners

# Table of contents

## **04 Supplements 101**

### **07 Nutrients**

**07** What are nutrients?

**07** How do nutrients work?

**07** Common examples of nutritional supplements

### **08 Botanical**

**08** What are botanicals?

**08** How do botanicals work?

**08** Examples of botanical ingredients

### **09 Hormones**

**09** What are hormones?

**09** How do hormones work?

**09** Examples of hormone ingredients

## **10 How to read a supplement label**

## **12 Drug-nutrient interactions**

## **14 Drug-nutrient depletions**

## **15 Determining supplement quality**

**15** Ingredient sourcing and absorption

**16** Product manufacturing

## **18 Developing protocols**

# At Fullscript, we believe that dietary supplements are core to an integrative treatment plan.

From nutraceuticals to botanicals to multi-ingredient formulations, there's no shortage of options for practitioners interested in recommending supplements, and the industry continues to innovate at an incredible pace. With thousands of products available through Fullscript, it's sometimes difficult to know where to start.

As healthcare practitioners, it's critical that we remain well-informed about all the options available to us so that we can best support our patients.

We hope this guide provides you with the initial information needed to comfortably use dietary supplements in your practice. Our world-class customer success team is always available to answer questions, or connect you with our integrative medical advisory team for guidance on product selection and protocol development.

Dr. Alex Keller, ND

**Medical Director**  
**Fullscript**



# Supplements 101

Regardless of your experience level, the supplement landscape can easily become overwhelming. This section will touch on some key categories of supplements and how to best work with them.

**Supplements can be divided into three key categories:**



## Nutrients

also known as  
Nutraceuticals or  
Orthomolecular Medicine



## Botanicals

also known as  
Herbal Medicine  
or Phytotherapy



## Hormones

also known as Hormone  
Replacement Therapy  
or Restorative Medicine

Each category is meant to support underlying excesses or deficiencies, with the ultimate goal of bringing the body back into balance. Where it can become complicated is in understanding the different uses and dosing of specific extracts, chelates, preparations, and more.

In the Fullscript catalog alone, there are over 10,000 unique products to filter through and understand.

*Let's try to make some sense of it all...*





Supplement type	Description	Key functions	Examples
<b>Enzymes</b>	Proteins that act as catalysts (increase the rate) of chemical reactions in the body	Break down carbohydrates, lipids, and proteins; degrade potentially harmful substances	Amylase Nattokinase Lactase Lipase Protease Serrapeptase
<b>Fiber</b>	Complex carbohydrates indigestible by humans	Supports digestion (improves regularity of bowel movements), provides a source of energy for gut bacteria, reduces cholesterol	Guar gum Pectin Psyllium husk
<b>Greens</b>	Products containing one or more green plant ingredients, including algae, fruit, grasses, and vegetables	Provide antioxidants, vitamins, minerals, and anti-inflammatory properties	Alfalfa Barley grass Chlorella Spirulina

Supplement type	Description	Key functions	Examples
<b>Herbs</b> (also called botanical medicine, phytotherapeutics, or medicinal herbs)	Plants used in herbal medicine for their therapeutic properties and health effects; parts used include the root, rhizome, bark, stem, leaves, seeds, flowers, and fruit	Exert therapeutic actions (e.g., analgesic, anti-bacterial, anti-inflammatory, improve insulin sensitivity) through active components	Ashwagandha ( <i>Withania somnifera</i> ) Garlic ( <i>Allium sativum</i> ) St. John's wort ( <i>Hypericum perforatum</i> ) Turmeric ( <i>Curcuma longa</i> )
<b>Medicinal mushrooms</b>	Edible fungi that possess a variety of therapeutic properties and health effects	May induce anti-inflammatory, anti-microbial, and/or immunomodulating effects	Chaga ( <i>Inonotus obliquus</i> ) Lion's mane ( <i>Hericium erinaceus</i> ) Reishi ( <i>Ganoderma lingzhi</i> ) Turkey tail ( <i>Coriolus versicolor</i> )
<b>Minerals</b>	Elements required in small amounts from the diet	Contribute to a variety of bodily functions including fluid balance, nerve transmission, muscle function, bone development, and blood pressure regulation	Macrominerals (e.g., calcium, magnesium, potassium) Microminerals (e.g., iron, selenium, zinc)
<b>Omega fatty acids</b>	Fatty acids containing one or more double bonds between carbons within the fatty acid chain, making them unsaturated	Contribute to energy storage, endocrine function, immune function, and cellular structure	Omega-3 fatty acids (e.g., EPA, DHA) Omega-6 fatty acids (e.g., LA, GLA)
<b>Probiotics</b>	Live microorganisms that, when administered in adequate amounts, confer a health benefit to the host	Inhibit the growth of pathogens in the gut; support gastrointestinal health, immune function, and nutrient absorption	<i>Bifidobacterium longum</i> <i>Lactobacillus acidophilus</i> <i>Saccharomyces boulardii</i>
<b>Protein</b>	Large molecules consisting of amino acids; essential as structural components in the body	Builds/repairs muscle and other tissues; synthesizes DNA, hormones, enzymes, and neurotransmitters	Amino acids (e.g., l-carnitine, l-glutamine) Enzymes Protein powder
<b>Vitamins</b>	Organic compounds required in small amounts from the diet	Contribute to a variety of bodily functions including vision, energy production, bone metabolism, immune function, metabolism, and blood coagulation	Fat-soluble vitamins (e.g., A, D, E, K) Water-soluble vitamins (e.g., B, C)



# Nutrients

For the purpose of this guide, nutrients are defined as ingredients that would otherwise be found in food including vitamins, minerals, phytochemicals, and antioxidants.

## What are nutrients?

In order to sustain life and wellness, the human body requires a careful balance of a broad range of nutrients, categorized as macronutrients and micronutrients.

Macronutrients constitute the major food groups of carbohydrates, fats, and proteins. They are required in large amounts, used primarily for energy production and tissue growth.

Micronutrients are required in trace amounts and include vitamins and minerals. Phytonutrients, such as anthocyanins found in blueberries or resveratrol found in grapes, are also often classified as micronutrients.

## How do nutrients work?

Macronutrients are the caloric basis for our daily energy needs, but also provide the building blocks of tissue development, fiber for our microbiota, cholesterol for hormone production, and more.

Micronutrients are not relevant for energy and instead contribute to tissue development, hormone and neurotransmitter production, brain function, immune function, and more. For a detailed review of the key dietary nutrients, visit [www.fullscript.com/learn](http://www.fullscript.com/learn).

## Common examples of nutritional supplements

Dietary supplements can provide a wide array of nutrients in condensed form, allowing users to target specific deficiencies or upregulate certain pathways that require those nutrients in abundance.

Some common examples include:

- **Whey protein isolate**
- **Omega-3 fatty acids**
- **Calcium**
- **B vitamins**



# Botanicals

For the purpose of this guide, botanicals are defined as therapeutic plant extracts, not otherwise intended as food, including whole plant extracts and specific phytochemical extracts.

## What are botanicals?

Considered the original pharmacy, records of humanity using botanical extracts therapeutically date back to the beginning of recorded history. More recently, botanical medicine has served as the inspiration for numerous pharmaceutical interventions and continues to reveal its purposes via modern research.

For the integrative practitioner, botanical medicine is essential, normally eliciting far fewer and less significant adverse effects than pharmaceutical interventions. A growing body of research shows that if used in correct dosages, certain botanical extracts are in fact more effective than pharmaceutical equivalents, and often more cost effective as well.

## How do botanicals work?

Botanical medicine has as broad a pharmacopeia as modern pharmaceuticals. Given their capacity to interact with virtually every bodily system and tissue, there are literally thousands of therapeutic uses for botanicals. Although there is a vast amount of literature on the traditional use of botanical medicine, there is only a scant amount of modern research relative to modern pharmaceutical interventions. As a result, it becomes somewhat challenging to compare most

botanicals with pharmaceuticals regarding clinical outcomes. However, according to a recent World Health Organization report, this landscape is rapidly evolving. For a review of the various uses and existing clinical research supporting botanical medicine, visit

[www.fullscript.com/learn](http://www.fullscript.com/learn).

## Examples of botanical ingredients

Botanical medicine can provide an abundance of therapeutic effects, allowing everyone, from the skilled practitioner to the common layperson, to apply these therapies effectively. Some common examples include:

- **Garlic (*Allium sativum*)** - immune function, cardiovascular function
- **Goldenseal (*Hydrastis canadensis*)** - lowering blood sugar, decreasing triglycerides, antimicrobial
- **Reishi** - immune function, potential anti-cancer properties

**Note:** The form of extract is very important in botanical medicine. Plants contain a variety of therapeutic chemicals, differing in their use and extraction process. Practitioners should not only understand the existing clinical research and how to dose these extracts for therapeutic purposes, but also to prevent harm.





# Hormones

In integrative medicine, hormone therapy typically involves the use of bioidentical versions of plant extracts, mimicking the chemical structure of endogenously produced hormones.

## What are hormones?

Hormones are chemical messengers produced by the endocrine glands. These messengers have an effect on most tissues and major bodily functions. Establishing and resolving the causes of hormonal imbalance is one of the core therapeutic systems applied not only in integrative medicine, but in conventional medicine as well.

## How do hormones work?

Hormones are abundant in the body's circulation, but cells require specific receptors for hormones to elicit an effect. When a hormone binds to a specific receptor, it causes a biological response within that cell, which is why a singular type of hormone can have such a broad effect. The entire endocrine system is based on positive and negative feedback loops, which inform endocrine glands as to whether more or less hormones should be produced.

While balance of endogenous hormone production is ideally maintained via diet and lifestyle, disease can easily occur when this delicate balance is disrupted. If this happens, exogenous hormones can be used to elicit similar or identical effects on the same cell receptors.

However, considering their broad and potent effect on a variety of systems, using hormones therapeutically must be done with caution and skill. Long-term adverse effects are not uncommon with hormone therapy, and its use should be limited to highly-trained practitioners.

## Examples of hormone ingredients

Exogenous hormones are available in a variety of forms. It should be noted that certain nutrients may also be supplemented to upregulate the endogenous production of hormones.

Some common examples include:

- **Pregnenolone** - the “mother” of the steroidogenic hormone pathway
- **Dehydroepiandrosterone (DHEA)** - elevates estrogen and testosterone
- **Vitamin D** - regulates bone density, balancing parathyroid hormone secretion

Preliminary evidence demonstrates broad and highly beneficial therapeutic uses for exogenous hormones. However, similar to botanical medicine, hormone therapy should be used exclusively and with caution by skilled clinicians.

# How to read a supplement label

**Supplement Facts**  
 Serving Size 2 Capsules  
 Servings Per Container 30

	Amount Per Serving	% Daily Value
Vitamin C	500mg	834%*
Zinc	20mg	199%*
Beta Glucans	300mg	†
Echinacea purpurea Standardized to 4% alkylamides (4 mg)	100mg	†
<b>Proprietary blend</b>	<b>500mg</b>	
Echinacea angustifolia (leaf)		†
Allium sativum (bulb)		†
Withania somnifera (root)		†
Ganoderma lucidum (aerial parts)		†
Rhodiola rosea (root)		†
Andrographis paniculata (aerial parts)		†

\* Percent Daily Values are based on a 2,000 calorie diet.  
 † Daily Value not established.

The "Supplement Facts" title is an indicator that the product is marketed for sale in the U.S. and is an FDA standard.

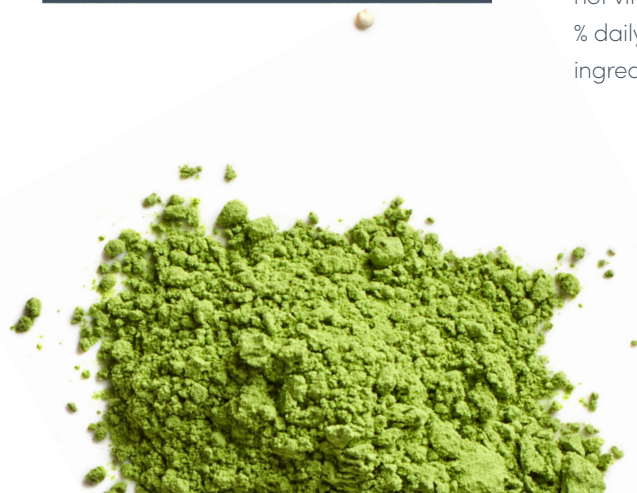
The serving size, and sometimes the number of servings per container, will be included to help you compare more easily between products.

Make sure the serving sizes match when comparing supplements to get an accurate comparison between the products.

Vitamins and minerals will always show the dose in both weight and % daily value to help you understand how you're hitting your dietary requirements.

Many supplements will have doses that exceed the recommended daily value.

Dietary supplement ingredients that are not vitamins or minerals will not have a % daily value as they are not essential ingredients in the diet.



Dietary supplements are regulated by the FDA, and all labels must follow a consistent format to make it easier for consumers to understand supplements. There are some tricks to understanding dietary supplement labels well, so be sure to pay attention to the following points when you're evaluating your supplements.

Supplement Facts		
Serving Size 2 Capsules Servings Per Container 30		
	Amount Per Serving	% Daily Value
Vitamin C	500mg	834%*
Zinc	20mg	199%*
Beta Glucans	300mg	†
Echinacea purpurea Standardized to 4% alkylamides (4 mg)	100mg	†
Proprietary blend	500mg	
Echinacea angustifolia (leaf)		†
Allium sativum (bulb)		†
Withania somnifera (root)		†
Ganoderma lucidum (aerial parts)		†
Rhodiola rosea (root)		†
Andrographis paniculata (aerial parts)		†

\* Percent Daily Values are based on a 2,000 calorie diet.  
† Daily Value not established.

Herbs will sometimes have additional information listed in the supplement facts panel. You might see ratio numbers (i.e. 4:1) that designate how much raw material of the herb (fresh or dried herb) went into making the supplement version of the herb.

Herbs might have a standardization amount that corresponds to how much of an active ingredient is present in the herbal supplement. The dose of the active ingredient is often listed, but not always.

Proprietary blends are common in dietary supplements. Only the total amount of the proprietary blend in a serving needs to be listed on a supplement, which means that you don't get all of the information about every ingredient that is in the blend.

Ingredients in a proprietary blend are listed in order from most to least. This is similar to how food ingredients are listed on nutrition facts panels that you find on prepared foods.

The daily value percent is established against a 2,000 calorie diet. While this is the standard calorie amount across most labels, it's always important to scale your requirements based on the calorie intake that you need to reach your health goals.

Developing individualized treatment plans that combine pharmaceuticals with supplements can easily become complicated. The following charts allow for quick referral when working with the most common pharmaceuticals.

The information provided in the following charts is based on a review of literature available at the time of publication. While the content is considered to be accurate at the time of publication, new or updated research

released after the publication date may impact the accuracy of the information. Please use clinical discretion when consulting this resource and refer to the online resources\* for the most recent versions.

## Drug-nutrient interactions

Pharmaceutical	Class of drug	Nutrient	Interaction	Class
<b>Acetaminophen/ Hydrocodone</b> Vicodin, Norco	<b>Pain</b> Narcotic, Anti-Inflammatory	Caffeine	Increases analgesic effects	A
			Increases absorption	B
			Increases elimination of drug	C
		Alcohol	Increases risk of hepatotoxicity	B
			Induces CYP2E1	C
<b>Albuterol</b> Ventolin, Proventil	<b>Breathing</b> Bronchodilator	None	No significant interactions confirmed	N/A
<b>Amlopidine</b> Norvasc	<b>Blood Pressure</b> Calcium Channel Blocker	Grapefruit Juice	Inhibits CYP3A4; slightly increases plasma concentration of drug	C
<b>Atorvastatin</b> Lipitor	<b>Cholesterol</b> Statin	Grapefruit Juice	Increases serum atorvastatin; Induces CYP3A4; increases plasma concentration of atorvastatin acid and atorvastatin lactone	B C
		St. John's Wort	Increases LDL and total cholesterol	C
<b>Gabapentin</b> Neurontin, Neuraptine	<b>Neuropathy, Pain</b>	Alcohol	Gabapentin is safe to use in treatment of alcohol dependency; reduces symptoms of alcohol withdrawal	A
		Cannabis	Gabapentin reduces symptoms of cannabis withdrawal	B
<b>Insulin Glargine Injection</b> Lantus Solostar	<b>Diabetes</b> Insulin analogue	None	Potentially significant theoretical interaction  See the white paper for further details	F

For more information about the Fullscript evidence rating scale, please refer to:

[fullscript.com/blog/evidence-based-decision-support](https://fullscript.com/blog/evidence-based-decision-support)



Pharmaceutical	Class of drug	Nutrient	Interaction	Class
<b>Levothyroxine</b> Levothroid, Synthroid	<b>Thyroid</b> Synthetic Thyroxine	Calcium	Decreases absorption of drug; increases TSH	B
		Vitamin C	Increases absorption of drug; decreases TSH	B
		Coffee	Decreases absorption of drug	C
		Grapefruit Juice	Inhibits OATP1A2; slightly decreases absorption of drug	C
<b>Lisinopril</b> Prinivil, Zestril	<b>Blood Pressure</b> ACE Inhibitor	None	No significant interactions confirmed	N/A
<b>Metformin</b> Glucophage XL, Gluformin	<b>Diabetes</b> <b>(biguanide)</b> Hepatic Glucose Reducer	Berberine (300 mg)	Improves insulin sensitivity; decreases HOMA-IR, total cholesterol, LDL	B
		Alcohol (>7 drinks/ week)	Increases effect of drug; increases lactic acidosis and lactate production	C
<b>Metoprolol</b> Lopressor, Toprol- XL	<b>Blood Pressure</b> Beta-blocker	None	No significant interactions confirmed	N/A
<b>Omeprazole</b> Prilosec, Zegerid	<b>Acid-Reflux</b> Proton Pump Inhibitor	St. John's Wort	Induces CYP2C19 and CYP3A4; decreases effectiveness of drug	C
		Grapefruit Juice	Inhibits CYP3A4; inhibits metabolism of drug	C
<b>Rosuvastatin</b> Crestor	<b>Cholesterol</b> Statin	Grapefruit Juice	Inhibits OATP2B1; reduces bioavailability of drug	C
		EGCG	Significantly reduces systemic exposure of drug	C

Updated June, 2021

# Drug-nutrient depletions

Pharmaceutical	Class of drug	Nutrients depleted	Recommended dosage	Class
<b>Acetaminophen/ Hydrocodone</b> Vicodin, Norco	<b>Pain</b> Narcotic, Anti-Inflammatory	Glutathione	NAC - FDA approved protocol  <b>Loading phase:</b> 0.14 to 0.16 g/kg up to 17 doses.  <b>Maintenance:</b> 0.069 to 0.083 g/kg	B
<b>Albuterol</b> Ventolin, Proventil	<b>Breathing</b> Bronchodilator	No significant depletions confirmed. See white paper for details.	N/A	N/A
<b>Amlodipine</b> Norvasc	<b>Blood Pressure</b> Calcium Channel Blocker	No significant depletions confirmed	N/A	N/A
<b>Atorvastatin</b> Lipitor	<b>Cholesterol</b> Statin	Coenzyme Q10	50-200 mg/day	B
<b>Gabapentin</b> Neurontin, Neuraptine	<b>Neuropathy, Pain</b>	Folic Acid	400 mcg/day	B
<b>Insulin Glargine Injection</b> Lantus Solostar	<b>Diabetes</b> Insulin analogue	Magnesium	336 mg/day for 3 months	B
<b>Levothyroxine</b> Levothroid, Synthroid	<b>Thyroid</b> Synthetic Thyroxine	No significant depletions confirmed	N/A	N/A
<b>Lisinopril</b> Prinivil, Zestril	<b>Blood Pressure</b> ACE Inhibitor	Zinc	11 mg/day for men and 8 mg/day for women	A
<b>Metformin</b> Glucophage XL, Gluformin	<b>Diabetes (biguanide)</b> Hepatic Glucose Reducer	Vitamin B12	1000 mcg/day sublingual	B
		Folic Acid	5 mg/day	B
<b>Metoprolol</b> Lopressor, Toprol-XL	<b>Blood Pressure</b> Beta-blocker	No significant depletions confirmed. See white paper for details.	N/A	N/A
<b>Omeprazole</b> Prilosec, Zegerid	<b>Acid-Reflux</b> Proton Pump Inhibitor	Magnesium	250-300 mg/day	A
		Vitamin B12	1000-2000 mcg/day	C
		Calcium	500-1000 mg elemental calcium (carbonate, citrate) 3x/day	C
		Iron	105-210 mg/day elemental iron	C
<b>Rosuvastatin</b> Crestor	<b>Cholesterol</b> Statin	Coenzyme Q10	50-200 mg/day	A

# Determining supplement quality

Working with high-quality dietary supplements is crucial to achieve the best possible clinical outcomes. But what does high-quality even mean?

There are a few key factors to assess when selecting the products you work with:

- **Ingredient sourcing**
- **Ingredient absorption**
- **Product manufacturing**

## Ingredient sourcing and absorption

The source of ingredients when working with both simple and complex patient cases is the first step in determining whether you will have a high-quality end product. If working with nutrients, one might question whether the ingredient is naturally derived or synthetically produced. If the latter, this will have an effect on absorption and/or cause side effects.

For the purpose of this introductory resource, let's consider iron. There are various forms of iron found in dietary supplements. Three examples include:

- **Ferrous fumarate**
- **Ferrous bisglycinate**
- **Heme iron**

Ferrous fumarate is the iron salt from fumaric acid, which is found naturally in certain mushrooms and moss species, but is typically synthetically manufactured from malic acid in apples. Ferrous fumarate is one of the most common iron-based ingredients in dietary supplements due to its affordability, but it is also often shown to be associated with constipation.

Ferrous bisglycinate is an iron chelate, meaning it is manufactured to bind one molecule of ferrous iron to two molecules of the amino acid glycine. The patented version of ferrous bisglycinate is known as Ferrochel. Iron bisglycinate is widely thought to be more absorptive than ferrous fumarate, and therefore, causes less constipation. Iron chelates normally price in the mid-range of iron ingredients.

Heme iron is derived mainly from hemoglobin and myoglobin in animal tissue. It is absorbed more efficiently than non-heme iron, at a rate of 15 to 35%, depending on the person's current iron saturation levels. Heme iron, although typically the most expensive form of supplementary iron and not vegan-friendly, is considered the best absorbed form of iron.

Similar examples exist for most supplement ingredients, so please take the time to review the ingredient summaries at [www.fullscript.com/learn](https://www.fullscript.com/learn) to learn more about the wide variety of options available.

## Product manufacturing

Supplement product manufacturing standards vary widely in the United States. However, as of 2007, all United States supplement manufacturers are required to comply with FDA-mandated Current Good Manufacturing Practice (CGMP) guidelines. Typically, CGMP standards are considered the baseline to “ensure the quality of the dietary supplement and to ensure that the dietary supplement is packaged and labeled as specified in the master manufacturing record.”

Beyond CGMP, many supplement manufacturers will elect to apply voluntary third-party certification to their manufacturing or ingredient-sourcing standards.

See the chart on the next page for some common examples of third-party certifications. At Fullscript, we believe quality is uniquely defined by each individual user. As a result, we allow practitioners to curate a catalog that best suits the needs of their patients.

In our catalog’s advanced search tool, you will find several of these third-party certifications that can be used for filtering when selecting products.

You can also learn more about dietary supplement quality at <https://fullscript.com/supplement-quality>.





These are some of the numerous third-party certifications you will find in the Fullscript catalog. Note that specific certifications can be applied for different reasons, so it's important to understand and determine what quality assurances are important to you.

Certification Mark	Organization	Description
	<b>United States Pharmacopeia (USP)</b>	The USP Dietary Supplement Verification Program is a voluntary third-party certification aimed at verifying the quality of finished products, ensuring what's on the label is in the bottle.
	<b>International Organization for Standardization (ISO)</b>	The International Organization for Standardization (ISO) is an independent, non-governmental organization responsible for developing standards for products, services, and systems to ensure quality, safety, and efficiency.
	<b>National Sanitation Foundation (NSF)</b>	The National Sanitation Foundation (NSF) works to develop public health standards and certification programs that help protect the world's food, water, consumer products, and environment.
	<b>National Sanitation Foundation (NSF) Certified for Sport®</b>	The NSF Certified for Sport is a third-party certification program designed specifically for sport supplements to ensure products do not contain unsafe levels of contaminants, prohibited substances, and masking agents.
	<b>USDA Organic</b>	The National Organic Program (NOP), a program housed within the United States Department of Agriculture (USDA), is responsible for developing national standards for production, labeling, and enforcement of all USDA organic products.
	<b>Fair Trade</b>	Fair Trade Certified, a third-party certification based on social, environmental, and economic standards ensures that products are grown, harvested, manufactured, and traded in ways that improve lives and protect the environment.
	<b>The International Fish Oil Standards (IFOS)</b>	IFOS is a third-party certification program focusing exclusively on testing the purity, potency, and freshness of omega-3 fish oil products.
	<b>The Non-GMO Project</b>	The Non-GMO Project is a non-profit organization offering a third-party non-GMO verification program that aims to support sources and practices that effectively minimize GMO risk to the supply chain.
	<b>Gluten-Free Certification Organization (GFCO)</b>	GFCO is an industry program of the Gluten Intolerance Group (GIG), a non-profit organization that offers third-party certification to manufacturers of gluten-free products, including dietary supplements.
	<b>Vegan Action</b>	Vegan Action, a non-profit organization, offers third-party certification to verify vegan claims, ensures that animals and animal by-products have not been used in the formulation or manufacturing of products, and ensures that products have not been tested on animals.

# Developing protocols

Protocol development in integrative medicine is typically not a simple process. Patients require individualized care, and what works for one patient may not work for another.

The Fullscript Integrative Medical Advisory team advises using an *evidence-informed* approach to protocol development.

To simplify this process for practitioners, we have assembled a sampling of *evidence-based* standardized protocols that practitioners can use as a foundation when developing individualized protocols.

To establish these protocols, we first developed a rating scale to discern the rigor of evidence supporting a specific nutrient's therapeutic effect.

These protocols were developed using only A through D-quality evidence. The full rating scale is available at <https://fullscript.com/blog/evidence-based-decision-support>.

Class	Type	Studies
A	Systematic review or meta-analysis of human trials	N/A
B	Human RDBPC	≥ 2 studies and/or 1 study with ≥ 50 subjects
C	Human RDBPC or RCT	1 study < 50 subjects
D	Human trials or in vivo animal trials	

Please refer to the complete **Rating Scale** for further information.

For more protocols and a complete listing of the literature reviewed, visit our Knowledge Center:

[www.fullscript.com/learn](http://www.fullscript.com/learn)

## Disclaimer

The ingredients included in these protocols are based on a review of existing clinical research, with a priority placed on systematic reviews and meta-analyses, classified as A in the Rating Scale.

These protocols are intended to form a foundation for developing individualized treatment plans. Clinician discretion is highly advised, as ingredients can vary in safety and effectiveness, depending on the needs of the individual patient.



## Irritable bowel syndrome

### Peppermint (*Mentha x piperita*) oil

0.1-0.3 mL (or 200 mg), 3 times per day

- Significant reduction of abdominal pain and global symptoms, relative to placebo.
- Benefits no longer present two weeks after supplement cessation.

### Soluble dietary fiber

20-35 g per day of long-chain, intermediate viscous, soluble, and moderately fermentable dietary fiber

- Safe and effective in improving global IBS symptoms, relative to placebo. Note that short-chain, highly fermentable soluble fiber should be avoided as it can aggravate IBS symptoms.

### Probiotics

25-50 billion CFU, 1-3 times per day

- Effective in reducing symptom and severity score in patients with IBS.
- Current recommendations suggest using an equal dosage of *Lactobacillus* and *Bifidobacterium* species.

## Type 2 diabetes mellitus

### Berberine

500 mg, 3 times per day, minimum 12 weeks

- In diabetic patients, demonstrated reduction in blood glucose levels comparable in effect to pharmaceutical interventions.

### Chromium picolinate

500 mcg, 2 times per day, minimum 4 weeks

- Current literature confirms a minor reduction in blood glucose when supplemented consistently for four weeks or longer.
- Chromium supplements should be taken with a carbohydrate-containing meal.

### Psyllium husk

5 g, 3 times per day, minimum 6 weeks

- In diabetic patients, demonstrated minor to moderate reduction in blood glucose levels.
- 15 g daily is a minimum dose and can be titrated up gradually to patient tolerance.

For more protocols and a complete listing of the literature reviewed, visit our Knowledge Center at [www.fullscript.com/learn](http://www.fullscript.com/learn).



## Osteoarthritis

### Glucosamine

1.5 to 2 g per day, minimum 12 weeks

- Individual RDBPC studies consistently demonstrate reduction in pain and global symptoms of OA.
- Combination with chondroitin may increase overall effectiveness.

### SAMe

1200 mg, 1-2 times per day, minimum 30 days

- Multiple RDBPC studies demonstrated comparable pain reduction to OTC pharmaceuticals like naproxen and nabumetone.

### Turmeric (*Curcuma longa*)

500 mg MERIVA, 2-4 times per day, minimum 30 days

- In small clinical trials (< 100 subjects), demonstrated effect in pain reduction, comparable to acetaminophen.
- One recent review confirmed that both whole turmeric extract and curcumin demonstrated short-term reduction in pain.

Additional promising interventions with preliminary evidence demonstrating reduction in OA symptoms include:

- Green-lipped mussel extract
- Indian Frankincense (*Boswellia serrata*)
- L-carnitine
- Natural eggshell membrane
- Pycnogenol
- Type II collagen

## Summary

The ingredients included in these protocols are based on a review of existing clinical research, with a priority placed on systematic reviews and meta-analyses, classified as A in the Rating Scale.

These protocols are intended to form a foundation for developing individualized treatment plans. Clinician discretion is still advised, as ingredients can vary in safety and effectiveness depending on the needs of the individual patient.

For more protocols and a complete listing of the literature reviewed, visit our Knowledge Center at [www.fullscript.com/learn](http://www.fullscript.com/learn).





support@fullscript.com  
1 866 807 3828

Monday to Thursday 9am - 9pm EST  
Friday & Saturday 9am - 5pm EST

For more educational articles and content:  
[fullscript.com/learn](https://fullscript.com/learn)

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

