

# **Fix Your Gut Supplement Guide**

*A Basic Guide to  
Buying Supplements,  
Multi-Vitamins,  
Omega 3 's, and  
General Supplement  
Information*

**2nd Edition**

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Fix Your Gut

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## **DISCLAIMER**

The author of this book is not a doctor, physician assistant, nurse practitioner, nurse, or in the health profession period. Information in this book cannot be used to diagnose, cure, or treat any disease. Do not follow any recommendations in this book without first discussing it with your medical professional. The research within this book is intended to provide options that were successful in the cited trials and could work for the reader as well. Good luck!

# Fix Your Gut Family of Books

[Fix Your Gut](#)

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# Chapter 1

## Supplement Company Tiers and Recommendations

The average American purchases many of their supplements from Walmart or the local pharmacy. Most people then wonder why the supplement that they purchased made no difference in their health. Sadly, when it comes to the average person's health, most people will always go for the least expensive option. When it comes to buying the newest television, people will always spend the extra money for the best one. There is a huge difference between supplement companies and the quality of the supplements that they produce.

There is even a difference between generic medicine and patented medicine that is sold in this country, even though the FDA monitors both. The generic formula for Wellbutrin XL has been known for years to have an increased side effect profile and was also found to have decreased efficiency in the people who used it. It took FIVE years for the FDA to admit that there was a difference between the two medications and that the generic will finally be brought up to the patented standard.

You should always check the country of origin that your medicine /supplement are produced. You want it to be produced in the USA, Australia, New Zealand, Russia, Japan, Taiwan, Korea, EU, Israel, or Canada. If the product is listed as being produced anywhere else, you might want to pay more for the non-generic medicine or a different supplement made in one of these listed countries. Most of the countries listed have strict laws that regulate the production of medication and supplements, which may lead to a higher quality that you can trust.

A decent indication of an honest supplement company is if they follow at the very least GMP practices. Good manufacturing practices are a specific set of protocols that the FDA determined that are needed for the safety of producing supplements. GMP ensures that the supplements you purchase are not contaminated and have the correct dosage and potency. It is also always good to purchase a supplement that is pharmaceutical grade if possible along with it having a GMP seal. If a supplement is made from pharmaceutical grade materials, it means that the supplement could

either have been used in common medication preparations or that the materials are of very high quality.

## **Top 5 Mainstream Supplement Companies**

### **Number 5 Company: NOW**

NOW produces high-quality supplements, they rarely use fillers and are reasonably priced. NOW is a great American company based out of Illinois! Their supplement production facility follows GMP practices in the manufacturing of their supplements and offers body care products and sports supplements. NOW has a free online university through their website that helps consumers learn more about the supplements they are taking.

### **Number 4 Company: Life Extension**

Life Extension is one of the oldest US-based supplement companies and manufactures their products in Florida. They are a great supplement company offering a lot of niche supplements, as well as great proprietary supplements. Life Extension does a lot of research when it comes to their supplements—more than any other supplement company in the United States! They occasionally put fillers in their products, but they maintain a high standard of excellence. I recommend that everyone sign up for their free magazine. It is full of great information and studies. Their production facility also follows GMP practices.

### **Number 3 Company: Jarrow Formulas**

Even though Jarrow Formulas is more prone to place fillers in their products like magnesium stearate, they are still one of the best supplement companies. Jarrow Formulas is in California and falls under the GMP for their facilities and supplements. They also tend to use pharmaceutical grade resources, which are the highest-grade materials you can get. For Jarrow, I highly recommend their probiotics, amino acids, and ubiquinol.

### **Number 2 Company: Thorne Research**

I trust Thorne Research almost as much as the number one company, but they occasionally add fillers to their products. The fillers they add though are usually beneficial to the body (magnesium laurate). Nevertheless, they are a great American based company out of Idaho. They also practice GMPs as well as in-house laboratory testing publicizing the results afterward. Thorne Research also makes one of the only multivitamins that I can recommend.

### **Number 1 Company: Pure Encapsulations!**

Pure Encapsulations will always be my favorite company, but usually their supplements are the most expensive. They are in Massachusetts, and they are a reputable American company. Their capsules are made from hypoallergenic cellulose. The best thing about them is that most of their products have no fillers in them, as opposed to their cheaper competitors. These fillers can be very bad for you to ingest and include polypropylene glycol (antifreeze), magnesium stearate (causes digestion issues), soy lecithin (GMO), etc. Their products are also GMP certified, and they have an “open plant” policy, which means anyone can come visit their plant. If you go to their website, they list all ingredients in their supplements and even their country of origin. Pure Encapsulations are truly the best supplement company!

## **Niche Companies That I Trust!**

These supplement companies tend to specialize in a small market or only make one type of supplement. These are the niche companies that I highly recommend.

- Sun Warrior
- Enzymedica: They make the best digestive enzymes.
- Nordic Naturals: They make some of the best fish oils!
- Sun Chlorella
- Himalaya
- George's Aloe Vera
- North American Herb and Spice
- Clean Chlorella
- Upgraded Self
- Coorganic

- Nutrapro
- Nutiva
- Carnivora
- Gaia Herbs: Great NC-based herb company. I live in NC and have been to their farms. Top notch!

## **Other Supplement Companies I Trust:**

- Megafood
- Douglas Labs
- Nature's Plus
- Pharmax
- Enzymatic Therapy
- Renew Life
- Xymogen
- Designs for Health
- Carlson
- Wakunaga
- Reserveage Organics
- Klaire Labs
- Solgar
- Source Naturals

## **Supplement Company Tier System (Non-Niche Companies)**

### **Top Tier:**

- Pure Encapsulations
- Thorne Research / Thorne FX
- Designs for Health

- Seeking Health
- Xymogen / NuMedica

### **Upper Tier:**

- Life Extension
- Jarrow Formulas
- Gaia Herbs
- Metagenics
- Pharmax
- Douglas Labs
- Klaire Labs
- Healthforce Nutritionals
- Reserveage Organics
- New Chapter

### **Mid Tier:**

- Now
- Wakunaga
- Doctor's Best
- Renew Life
- Enzymatic Therapy
- Solgar
- Source Naturals
- Garden of Life
- Mega Food
- Irwin Naturals
- Nature's Plus
- Carlson
- Genesis Today

### **Low – Mid Tier:**

- Swanson
- Vitamin Shoppe Brand
- Nature's Way
- Sundown

### **Low Tier:**

- GNC Brand
- Vitamin World Brand
- Big Box Store Brand (CVS, Walgreens, Wal-Mart Brands)

## Chapter 2

# Buying Locally: Local Health Food Stores and Corporations

Most people purchase their supplements online nowadays because of the ease of use. They buy their supplements from online retailers and receive their purchase on their doorstep the next day. I order my supplements online on occasion because sometimes, specialized supplements are hard to find in my area. If possible, I buy my supplements at the local health food store to help the local economy. It might cost a few more dollars for my supplements monthly, but I feel that, in the end, it is a better way that I can give back to the businesses in my local community.

When you buy online, you also might not know the quality of the supplement ordered. Buying locally is important because your sales help maintain your local economy by supplying jobs, revenue, and tax revenue for your local municipality/state. When you buy supplements locally, you can see the condition of the supplement bottle and expiration date of the supplement before purchasing. You can also ask the store employees for advice on supplements. I believe in buying local if all possible because it is one of the easiest actions you can perform to give back to your community.

## Local health food store

### Pros:

- **Specialized selection.**
- **Offer local food, products, and supplements.**
- **Most workers at the local store are usually very knowledgeable about supplements.**
- **Very passionate workers.**

- **One can truly support the local economy by shopping at a local health food store.**

#### **Cons:**

- **Specialized selection can mean less choice.**
- **Sometimes workers may be the least knowledgeable due to limited training on supplements.**
- **Local supplement stores may be more expensive.**

I love shopping at The Apple Crate, my local health. The Apple Crate is a very nice store that sales specialized supplements from different brands and health food products, as well. Most people that work at the store are very knowledgeable, which is very important to me. One of the biggest things I despise in the natural health industry is misinformation. They also have a loyalty program where I can earn \$10 back for every \$100 I spend at the store, which is a great concept.

Most local health food stores have a wide selection of brands, supplements, and foods. This specialized selection of supplements can be a double-edged sword because the store can either carry the best brands for a supplement or off brands of supplements that are not worth purchasing. Shopping at a local health store can be a gamble sometimes. Sometimes a supplement will be top tier, and other times you must go somewhere else for the brands you might like. Most local health food store employees are very knowledgeable because they are very passionate about health. Most store owners work regular store hours and have a personal investment in being both knowledgeable and passionate about natural health.

Sometimes, you will encounter an employee who might only have basic knowledge at your local health food store because there is no systematic training program like at the bigger chains. Finally, local health food stores can be more expensive than large franchises and online companies, but I believe in paying slightly higher prices to help my local economy directly.

## **Vitamin Shoppe**

**Pros:**

- **Great overall selections.**
- **Most employees at the store usually have average knowledge of supplements.**
- **Some employees may have a passion for healthy living.**
- **You can support the local economy by shopping here.**
- **Competitive pricing.**
- **All employees receive training on supplements.**
- **Employees do not make a commission (therefore less pressure to make sales).**

**Cons:**

- **Less specialized selection of supplements.**
- **Some stores have less knowledgeable employees than others.**
- **Employee's passion for health usually is not as high as local health food stores.**
- **The Vitamin Shoppe house brand has spotty quality.**

I will be honest with you I have great respect for the Vitamin Shoppe, which is my prior employer. The Vitamin Shoppe, for the most part, respects their employees, which is rare for a corporation and is a great place to work.

The Vitamin Shoppe does have a few advantages over the local health food stores and other corporate supplement stores. Vitamin Shoppe carries the best overall selection of supplements then all other supplement retailers. The only problem with this generalized selection is that niche supplements, and high-tier supplements might not be found at the Vitamin Shoppe. Employees at the Vitamin Shoppe do receive education and information on supplements. This knowledge can help increase their ability to help customers. Sadly, this education can only go so far for some employees if they lack passion and treat their employment as "just another job." Employees are not paid by commission so they are not pressured to make

sales pitches recommending supplements that might not be needed to improve your health.

Finally, Vitamin Shoppe does not produce its house brand of supplements. Other supplement companies do the supplement manufacturing, so the quality of an individual Vitamin Shoppe brand supplement depends on the individual supplement and can be spotty at times.

## **GNC**

### **Pros:**

- **Most employees at GNC have average knowledge of supplements.**
- **Some employees can have a passion for healthy living.**
- **Can support the local economy by shopping here.**
- **Competitive pricing.**
- **All employees receive training on supplements.**
- **More locations than any supplement store.**
- **GNC offers the gold card discount.**

### **Cons:**

- **A small selection of supplements.**
- **Some stores have less knowledgeable employees than others.**
- **Passion for health usually is not as high as local health food stores.**
- **GNC house brand has spotty quality.**
- **GNC employees are paid a commission.**

Most small cities will at least have a GNC store and sometimes it is the only supplement store in town. GNC usually has a small assortment of supplements, and in the past, used carry only their house brand of supplements. GNC currently

carries supplements from more nationally recognized brands (Nordic Naturals, Nature's Way, and Now). Most employees working for GNC are educated in supplement use, knowledge and can make general supplement recommendations to improve your health. GNC has a frequent buyer's gold card discount that costs \$15 a year and can help you save up to 50% on supplement purchases at GNC.

When a consumer goes into a GNC store, it is better for them to be self-informed before entering the store. GNC pays their employees sales commissions on supplements. Some employees at GNC might use supplement nativity to their advantage and convince you to purchase expensive supplements that you do not need.

## **Vitamin World**

### **Pros:**

- **Most employees at vitamin world have average knowledge of supplements.**
- **Some employees can have a passion for healthy living.**
- **Can support the local economy by shopping here.**
- **Lowest pricing on supplements for brick and mortar supplement stores.**
- **All employees receive training on supplements.**

### **Cons:**

- **A small selection of supplements.**
- **Some stores have less knowledgeable employees than others.**
- **Passion for health usually is not as high as local health food stores.**
- **Vitamin World house brand is the least expensive: but lower quality can also come at a lower price.**
- **Vitamin World employees are paid a commission.**

Vitamin World is the third largest supplement retailer in the United States. Vitamin World usually has a very small assortment of supplements in their stores mostly carries its house brand of supplements. They offer a few nationally recognized brands (Source Naturals, USP Labs, and Now).

Most employees working for Vitamin World are educated in supplement use and knowledge and make general recommendations to improve your health. When a customer visits a Vitamin World, like GNC, it is good for them to be self-informed. Vitamin World pays their employees sales commissions on supplement purchases. Some employees of Vitamin World might use your supplement nativity to their advantage and convince you to purchase expensive supplements that you would not normally use or purchase.

## **Whole Foods**

### **Pros:**

- **Wide selection of supplements and natural food products.**
- **Most employees at whole foods have average knowledge of supplements.**
- **Passion for healthy living is usually higher than most corporate supplement stores.**
- **You can support the local economy by shopping here.**
- **Employees that work in the supplement section receive training on supplements.**

### **Cons:**

- **Whole Foods has not a lot of stores in the U.S.**
- **Some stores have less knowledgeable employees than others.**
- **Whole Foods house supplement brand is average tier at best.**
- **Supplements can be almost as expensive as local health food stores.**

Who does not love shopping at Whole Foods? You can purchase your grass-fed beef, MCT oil, cleaning supplies, and supplements, all in one convenient store!

Whole Foods has a good selection of supplements for a grocery store. In some Whole Foods stores, the supplement area of the store is larger than GNC, or Vitamin World stores. Most of the employees who work for Whole Foods have more passion for healthy living. A passion for healthy living might have to do with many Whole Foods stores being in college towns and affluent cities in the country where natural medicine might be more accepted.

The only cons for getting your supplements at Whole Foods is that there are not a lot of Whole Food stores in the country, so it might be hard to find one in your area. Also, most supplements at Whole Foods are more expensive than your local health food store.

## **Big Box Pharmacy Stores (CVS, Walgreens, Rite Aid)**

### **Pros:**

- **Big box pharmacy locations are everywhere.**
- **The price of supplements is lower.**
- **Pharmacies can carry well-known brands like Nordic Naturals and Renew Life, and Rite Aid carries GNC.**

### **Cons:**

- **Pharmacists have very little knowledge of supplements.**
- **House brands of big box supplements are garbage.**
- **Big box pharmacies have very limited supplement selection.**

I do not recommend that you buy your supplements from big box pharmacy stores if all possible. The supplement selection at a big box pharmacy usually is very

small. Supplement quality is spotty at best unless the supplement is made from a well-known national brand. Most pharmacists are not knowledgeable about supplements, and usually give, inaccurate information by accident. The only advantage of shopping at a big box pharmacy store is that they are located almost everywhere in the country.

## **Local Compounding Pharmacy**

### **Pros:**

- **Supplements are usually of high quality.**
- **Pharmacists usually have a knowledge of supplements and can provide decent recommendations.**
- **Can compound lesser known supplements and hormones.**
- **Compound pharmacies can make supplements for g-tubes.**

### **Cons:**

- **Supplements may be expensive.**
- **Compounding pharmacies may have very limited supplement selection.**

Your local compounding pharmacy is a lot better place to buy supplements than a big box pharmacy. Most local compounding pharmacies either will have an average assortment of different supplements or instead stock locally made compounded supplements. Compounding pharmacies also compound rare supplements, bio-identical hormonal creams, and supplements that can be used for people fed through gastrostomy tubes. Most pharmacists that work for your local compounding pharmacy have average supplement knowledge and make recommendations to improve your health. The only disadvantages of a local compounding pharmacy are that the supplements can be expensive, and the pharmacy can have limited selection depending on the size of the pharmacy.

## **Big Box Store (Walmart, Sam's Club, Costco, BJ's Warehouse Club)**

### **Pros:**

- **Everywhere**

### **Cons:**

- **Everything**

Do not buy your supplements at any big box store ever, unless they are trusted brands, and you have no other alternative to buy it elsewhere.

## Chapter 3

### **Buying your Supplements Online: Risk vs. Reward**

I do not order my supplements online unless necessary. Even though ordering your supplements online might be less expensive, most of the time you never know the quality of the supplement you might be receiving. If you buy online, you are also not supporting your local economy.

One of the main problems with ordering online is that you do not know that truly the supplement you are receiving is safe, without going to the store and purchasing a sealed bottle at a brick and mortar store. If you order an unlabeled supplement online, the source of the supplement might be from China. Some supplements from China might be fine for use if they are produced with GMP practices, but others do not have quality control standards and often contain contaminants like heavy metals. Most unlabeled supplements online might have a low-price tag, but when you order an unlabeled supplement from the internet, you do not know if you are getting the true supplement, a placebo, or a product that might be harmful to your health.

Another problem with ordering supplements online is that without seeing the expiration date of the supplement before ordering, you might receive a supplement from time to time that has expired. Most retailers will let you return an expired product, but unlike returning an expired supplement to a brick and mortar store quickly with a receipt, online returns can be time-consuming and can take weeks to receive a new supplement from an online retailer.

Even though ordering supplements online might be cheaper, I only recommend ordering supplements online that you cannot find locally if all possible. If you do choose to order supplements online, use this quick reference guide to balancing the pros and cons, and choose which website is best for your needs.

**Amazon.com**

### **Pros:**

- **Buying your supplements on Amazon can save you a lot of money.**
- **Amazon carries an excellent selection of supplements.**
- **Amazon carries a lot of hard to find supplements.**
- **Competitive pricing.**
- **Free two-day shipping with Amazon Prime membership.**
- **Free three – five-day shipping offered on most orders.**
- **Possible one-day shipping for most orders.**
- **Free order tracking.**
- **Amazon itself has a great return policy on expired supplements.**
- **Amazon and some of their suppliers offer a refund policy on unopened supplements.**
- **Amazon offers above average customer service.**
- **Amazon offers a good selection of organic food and products.**
- **Amazon has multiple reviews and an established rating system for most supplements.**

### **Cons:**

- **Some supplements may be more expensive than other websites due to market demand and distributors.**
- **If you buy from other distributors that sell supplements on Amazon than the parent company, it might be easier to receive an expired supplement.**
- **Different distributors have different return policies, which may cause issues in returns.**
- **Limited international shipping.**
- **Amazon does not carry as many high-tier supplements as [pureformulas.com](http://pureformulas.com)**

- **Depending on what state you live in if Amazon has a warehouse in the state you will be charged sales tax on every order.**

If I have to order a supplement online, I use Amazon.com or Pure Formulas to order most of my supplements. I have an Amazon Prime membership and use it to get my supplements within two days of ordering. Amazon offers many different supplements that can be hard to find on other websites, and they offer a large organic food selection and green cleaning products.

My main concerns with ordering from Amazon is that occasionally you will receive an expired supplement, and depending on what state you live in and if you have an Amazon warehouse in that state, you might be charged sales tax on every purchase. If you use Amazon to purchase your supplements, try to buy them from the parent company and not other distributors unless they have a high rating. If you order your supplements from Amazon's warehouse directly, you have less of a chance to receive an expired supplement.

## **PureFormulas.com**

### **Pros:**

- **Carries top tier quality and hard to find supplements than any other e-commerce site.**
- **Pureformulas carries a near perfect selection of supplements.**
- **Pureformulas has a customer loyalty program.**
- **Excellent customer service and return policy.**
- **Free order tracking.**
- **Very low chance of receiving an expired supplement.**
- **They do not charge sales tax.**
- **Pureformulas offers coupon codes online.**
- **They send out coupons with every supplement shipment.**

- **Can pay with PayPal, which may add some extra purchase protection and enhanced refund policy.**

#### **Cons:**

- **Tends to be the most expensive supplement e-commerce site.**
- **Amazon.com offers lower shipping costs and options on most products.**
- **Pureformulas does not offer organic food.**
- **No international shipping.**
- **Even though, Pureformulas might have the highest tier quality supplement selection; they might lack offering some mid-range supplements that are fine for most circumstances.**

Pureformulas is a great website internet company from Florida that carries many top tier supplements that are hard to find even on Amazon occasionally. They carry all the top tier companies: Pure Encapsulations, Thorne Research, Designs for Health, Xymogen / NuMedica, Life Extension, Jarrow Formulas, Gaia Herbs, Metagenics, Pharmax, Douglas Labs, Klaire Labs, Healthforce Nutritionals, and Reserveage Organics.

Pureformulas also carries an excellent free frequent buyer points club, send coupons with every order, and they also have excellent customer service and return policy. They also do not charge sales tax, and they do not charge a lot for shipping.

The only main issue with ordering from Pureformulas is that it is the most expensive supplement e-commerce site around. Even though they tend to be more expensive, all the perks that come with ordering from them make it well worth it to use them for hard to find supplements. I still highly recommend them!

## **Iherb.com**

#### **Pros:**

- **Iherb carries a great selection of supplements.**

- **The website does carry some high-tier supplements.**
- **International shipping for most supplement orders.**
- **Iherb offers a reward program.**
- **Offers coupon codes.**
- **Free expedited one to five-day shipping on orders over \$20 in the U.S.**
- **Iherb does not charge sales tax for orders.**
- **Low chance of receiving out of date supplements.**
- **Iherb offers a good selection of organic food and products.**
- **Iherb has a good sixty-day return policy.**

**Cons:**

- **Iherb does not carry supplements from all the high-tier supplement companies.**
- **They do not offer an unopened refund policy.**
- **There are some reviews of Iherb on the internet about occasional shoddy international shipping (long delays, losing orders).**

If you are an international customer, Iherb is probably your best bet in purchasing the supplements that you need at a decent cost. For shoppers in America, I usually recommend Amazon or Pure Formulas for the ordering of supplements, but Iherb is almost just as good in most circumstances. Iherb has a great selection of supplements to choose from, great customer service, they do not charge sales tax, and they offer free shipping on orders over \$20. Finally, Iherb offers a reward program and offers coupon codes to help you save money on your order.

There are a few issues with ordering from Iherb in getting your supplements if you are an international customer. Some people have complained of long delays in receiving shipments (three - four weeks) and in some cases, supplements shipped did not even arrive! Iherb does not carry supplements from all the high-tier companies, and they also do not offer a refund policy if you are dissatisfied with the supplement.

# Swansonvitamins.com

## Pros:

- **Swanson carries a decent selection of supplements.**
- **Swanson offers a large quantity of their house brand of supplements.**
- **Great customer service and return policy.**
- **Low chance of receiving an expired supplement.**
- **Swanson offers coupon codes online to save money.**
- **Swanson also offers “free” shipping.**
- **One-year refund policy for supplements.**

## Cons:

- **Swanson carries a limited amount of high-tier supplements.**
- **The “free” shipping they offer is only for an order over \$50.**
- **Their house brand of supplements is mid-tier.**
- **You have to ship back the supplement to Swanson for the refund.**

Swanson offers one of the best selections of a house brand of products that I have ever seen for an e-commerce site. Some of the supplements in the house brand can range from being top tier to sadly low tier. Even though some of their supplements are questionable, I applaud them for trying to be very ambitious with having their house brand of supplements. Swanson offers a decent selection of other name brand supplements and has a great customer service and return policy. Finally, Swanson offers coupon codes to help you save money, and they offer a one-year refund policy on supplements.

Swanson does offer one of the worse “free” shipping total amounts out of the e-commerce companies, which is \$50. They also only carry a very limited amount of

high-tier supplements. Other than that, I would trust them to purchase your supplements from them online.

## **eBay.com**

### **Pros:**

- **eBay can be the cheapest site to order your supplements. It is also the easiest way to buy supplements in bulk.**
- **You can pay with PayPal or a credit card on your orders.**
- **No sales tax.**
- **Sometimes free shipping is offered.**
- **Order protected by PayPal.**
- **Largest selection of supplements on any website.**
- **eBay has a review system for individual sellers to help you buy with confidence.**
- **Offers international shipping occasionally.**

### **Cons:**

- **Supplements you purchase from eBay may be from unreliable sources like China.**
- **Supplements have the greatest chance of being expired compared to other internet ordering options.**
- **One of the easiest internet ordering options where you can be scammed.**
- **PayPal protection does not always work when ordering from eBay instead of an internet corporation or brick and mortar store.**

If you do not have a lot of money, eBay could be the least expensive e-commerce site to purchase your supplements. Ebay is also the easiest way to buy supplements in bulk, both powders that you can cap yourself, or supplements themselves. You

also can pay with PayPal, which can offer you a great sense of purchase protection and refunds if needed than using any other form of payment. Finally, depending on the supplier, you might be able to order supplements internationally.

Ordering your supplements from eBay does come with many concerns. If you buy your supplements in bulk, you may not know the source and quality of the supplements and the country of their manufacture. Also depending on the honesty of the supplier, you might not be sent the correct supplement that you thought you purchased, or the supplements you ordered might be out of date. PayPal's protection policy is not perfect; there are some issues where refunds for faulty products were never received, even when the purchaser was scammed!

## **Brick and Mortar Supplement Company Websites (Vitamin Shoppe, GNC, Vitamin World)**

### **Pros:**

- **Carries an average all-around selection of supplements.**
- **Average customer return policy.**
- **Average customer service.**
- **Offers free shipping on differencing amounts depending on the company.**
- **Most items can be returned to the store easily.**
- **Email membership saving clubs.**
- **No sales tax.**
- **Refunds are available for unopened items.**

### **Cons:**

- **Does not carry many high-tier supplements.**
- **Can be more expensive than the other online options.**
- **Does not carry organic food options.**

- **No international shipping.**

I prefer that instead of ordering from a brick and mortar supplement company online, you get your supplements from a local brick and mortar supplement company store. Support your local economy at all possible people!

## **Big Box Brick and Mortar Supplement Companies Websites (Pharmacies, Walmart, Target, Warehouse Clubs)**

### **Pros:**

- **None**

### **Cons:**

- **Plenty**

Do not buy your supplements at any big box store website ever; unless they are trusted brands, and you have no other alternative to buy it elsewhere.

# Chapter 4

## What to Look for / Avoid in a Multivitamin

There are always multiple threads on any given health forum that are dedicated to the further quandary of what the best multivitamin is that an individual can take. I hate to break it to you, but there is no “perfect” multivitamin. With that being said, there are still some multivitamins that I can recommend people take to save some money over buying individual supplements.

### What to Look for in a Multivitamin

#### Quality Mineral Chelations

The best standard chelation for any mineral would be *glycinate*. Minerals that are chelated with the amino acid glycine have some of the highest absorption rates. Other average chelations that are quality include *citrate*, *malate*, *lysinate*, *ascorbate*, and *picolinate*.

#### Best Chelations of Certain Minerals

Certain minerals have better chelations than even glycinate chelations. These minerals include *selenium*, *zinc*, *iron*, and *chromium*. The best chelations of these minerals will be listed first.

*Selenium:*

Se-methyl L-selenocysteine, selenomethionine

*Zinc:*

L-OptiZinc, Opti-zinc

*Chromium:*

Chromium chelidamate arginate, chromium polynicotinate

*Iron:*

The best-chelated forms of iron are iron bisglycinate and iron picolinate. I recommend that most people do not take iron unless necessary. Low iron and ferritin stem from ceruloplasmin and gut issues.

### **Non-GMO Vitamin C and Vitamin E**

Most vitamin C in supplement form is made from corn dextrose fermentation. Corn dextrose can come from GMO sources. Most supplemental vitamin E is produced from GMO soybean oil unless listed as either from non-GMO soybean oil or rice bran oil.

### **Mixed Tocopherols/Tocotrienols (Vitamin E)**

Vitamin E is a complex family of vitamin substances that are made up of four types of tocopherols and four types of tocotrienols. Both substances have alpha, beta, gamma, and delta forms. It is better to have a multivitamin that has a mixture of all the different forms of vitamin E instead of a multivitamin that just provides alpha-tocopherol. The best source of tocopherols and tocotrienols for multivitamins are from rice bran oil.

### **Vitamin K**

Vitamin K, just like vitamin E, is a complex family of vitamin substances. There are five different main types of vitamin K. Vitamin K1 is the form that is found mostly in plants. It is found in the highest quantities in the green leafy vegetables that we consume. The body can recognize K1 as a vitamin K and can convert it into vitamin K2 if needed. This conversion does not happen very often in people with poor digestive systems because the proper probiotic intestinal bacterial population is needed for the conversion to happen properly. Vitamin K2 is the main form of Vitamin K that is found in the human body and is the form that we consume from animal meat and products. The different forms of vitamin K2 are characterized by the number of isoprenoid (a large, diverse class of naturally occurring organic chemicals) residues in their side chains. Vitamin K2 Mk-4 and Mk-7 are the most common types of Vitamin K2 that are used in supplements. Vitamin K2 Mk-4 is the best supplemental form of Vitamin K because it is Vitamin K2 that is produced from the conversion of Vitamin K1 by the probiotic bacteria in the intestines.

Vitamin K's biological role in the body is to help regulate proper blood-clotting mechanisms. Vitamin D synergistically works with vitamin K to promote proper bone growth and function. Vitamin K2 is used by the body as a fat-soluble electron carrier and helps to increase mitochondrial function. Vitamin K supplementation delays or can even help reverse atherosclerosis in some people. Vitamin K3 is synthetic and is banned for use in supplementation for humans in the U.S. This is because of potential liver damage associated with the synthetic vitamin. Vitamins K4 and K5 are synthetic forms of vitamin K that are poorly absorbed and, therefore, should not be used. Finally, it is always best to get your vitamin K in your multivitamin from non-GMO sources.

## **5'-Phosphate Forms of B Vitamins**

The phosphate forms of B vitamins are also known as coenzyme B vitamins. The body phosphorylates some B vitamins so that they can be actively used on a cellular level. Taking B vitamins that have been phosphorylated keeps the body from having to give up its phosphate groups for the conversion of some standard B vitamins. Coenzyme B vitamins have higher levels of absorption, as well.

## **Folate**

Folate is always superior to the cheaper folic acid supplement. Most people absorb folic acid poorly. Folic acid is an oxidized synthetic compound that must be converted to methyltetrahydrofolate in the liver. The body has a hard time on a cellular level converting and methylating folic acid, so very little methyltetrahydrofolate is produced from folic acid to be bioavailable in the body. The best supplemental form of folate is L-5-MTHF. Folinic acid can also be supplemented and is still better than folic acid. Remember, do not supplement with folate or folic acid without [knowing your methylation status](#).

## **Methylcobalamin (Hydroxocobalamin, Adenosylcobalamin)**

Any of these mentioned forms of B12 is better than the standard form cyanocobalamin. Cyanocobalamin is worthless in raising vitamin B12 levels in most cases. Cyanocobalamin is very poorly absorbed, has to steal a methyl group in the body to produce methylcobalamin, and releases a little bit of inorganic cyanide into the body with every pill! Methylcobalamin, hydroxocobalamin, adenosylcobalamin are the forms your body naturally uses, and each has their use depending on your [methylation pathways](#).

## **Vitamin D3**

Always make sure the vitamin D in the supplement is D3 and not the inferior D2. It is always best to get your vitamin D from proper sunlight exposure instead of supplements.

## **The More Capsules, the Better**

One-a-day multivitamins are some of the worst quality multivitamin supplements that are for sale. The reasoning behind this theory is that it takes massive amounts of heat and pressure to condense all the needed vitamins and minerals into one pill.

This process denatures some of the vitamins and wastes some of the minerals during supplement production. In addition, your multivitamin intake should be broken up between breakfast and dinner for optimal absorption. Usually, a multivitamin requiring six or more capsules/day is best and should be split between morning and night.

## **Capsules, Powdered, Soft gels, and Liquid Multivitamins Are the Best Forms**

As far as absorption of supplements is concerned, tablets are the worst. Most tablets, unless they are guaranteed to break down fully during digestion, are useless. The tiers for the assimilation of different supplements go:

Liquid>Powder>Soft gels>Liquid Capsules>Dry Capsules>Tablets

## **Fewer Fillers Are Always Better**

The fewer fillers used in a multivitamin, the better the quality of the multivitamin is. Some supplemental fillers considered safe and used commonly are *silicon dioxide, magnesium laurate, calcium laurate, magnesium citrate, leucine, rice flour, vegetable glycerin*, and possibly *vegetable stearate*.

## **Quality Brands**

When purchasing multivitamins, always buy brands that are well established for excellent quality controls.

## **What to Avoid in a Multivitamin**

## **Tablet Form**

Multivitamins in tablet form are usually poorly absorbed. You might do all right with the tablet form of a supplement if it is guaranteed to dissolve. To test if a tablet supplement will dissolve properly, use a mixture of a little water and a good quality digestive enzyme (e.g. Enzymedica), and pour the mixture onto the tablet placed in a bowl. Come back after a few hours and see if the tablet has dissolved most of the way. If so, then it has a better chance of being assimilated fully into the body.

## **Fillers**

Try to stay away from the following fillers when purchasing any multivitamins:

- *Magnesium stearate*
- *Aluminosilicate*
- *Crospovidone*
- *Modified food starch*
- *Polyethylene glycol*
- *Polypropylene glycol*
- *Maltodextrin*
- *Polysorbate 80*
- *Corn starch*
- *Food dyes*
- *Non-vegetable based glycerin*
- *Benzoic acid*
- *BHT*
- *BHA*

## **Poor-Quality Mineral Chelations and Forms**

Poor-quality mineral chelations include *aspartate*, *pidolate*, and *oxide*. Too much aspartate (aspartic acid) or pidolate (glutamic acid), which may be assimilated in the body by the chelations, might become neurotoxic. Any mineral chelated with oxide in the body would be poorly absorbed. Also, poor forms of copper like cupric sulfate and chelations of selenium like sodium selenite exist. They are the inorganic forms of the minerals and can be harmful to the body. These chelations can be harmful because they are both poorly absorbed, hard for the body to use properly, and difficult for the body to eliminate.

## **Poor Forms of Individual Vitamins**

These include *vitamin D2*, *cyanocobalamin*, *vitamin K3*, *K4*, *K5*, and *folic acid*. Most of these forms of vitamins are very poorly absorbed by the body or harmful; therefore, they are useless.

## **“Natural” Multivitamins**

Natural” multivitamins are one of the biggest frauds running in natural health today. A “natural” multivitamin is comprised of a bunch of brewer’s yeast compressed into supplemental form. Most “natural” multivitamins are made from feeding *Saccharomyces cerevisiae*, a yeast, synthetic vitamins that the yeast retains in their cell walls. The problem with using *Saccharomyces cerevisiae* as a vitamin carrier is twofold.

The first problem is that people who are allergic or sensitive to yeast will be sensitive to these multivitamins.

Second, the forms of the vitamins and minerals that you will absorb from the *Saccharomyces cerevisiae* medium are the same synthetic vitamins and mineral chelations that standard multivitamins use.

The main issue with this is that you do not know what synthetic vitamins the companies are feeding the yeast (I doubt they use the best forms of synthetic vitamins). In addition, most mineral amounts from these “natural” multivitamins are low, because it is currently a difficult process to extract minerals from the *Saccharomyces cerevisiae*. In addition, most of the “natural” multivitamins have extremely low levels of one of the most important minerals for supplementation — magnesium. All of these are reasons I cannot recommend most “natural” multivitamins to anyone.

### **GMO Vitamin C, Vitamin K2, and Vitamin E**

Since most of the vitamin E, vitamin K2, and vitamin C in multivitamins are GMO and very heavily processed, I let this slide. In addition, because of this fact, GMO proteins might not exist in the final product. Having any GMO source of vitamins in multivitamins still concerns me though, and, therefore, should be avoided if possible.

### **Cheap Brands**

Do not buy your multivitamin from any company that is not listed in chapter one. Any multivitamin that you can buy from a big box store or pharmacy is garbage unless it is a trusted brand listed in chapter one.

### **Hypervitaminosis and hypermineralosis**

Some multivitamins have too many vitamins or minerals in them that can cause issues in the body. These conditions are covered in further detail in chapter seven and eight.

# Chapter 5

## My Recommended Multivitamins

After years of research, I will list my top three best synthetic multivitamins, the best liquid multivitamin, the best multivitamin powders, the best prenatal multivitamin, the best natural multivitamin, and the best multivitamins for your children. Keep in mind that no multivitamin is perfect. Multivitamins are great for the convenience of taking in more nutrients that you may be lacking from your diet, but I would not supplement with one until I knew my [MTHFR](#) status and genetic pathways. For most people, it is best to supplement with the individual vitamins and minerals one is lacking from their diet instead of taking a multivitamin.

### Top 3 Standard Multivitamins

#### 1. Thorne Research Basic Nutrients 3-5

##### **Advantages:**

- Vitamin D3
- Vitamin K1
- 5'-Phosphate forms of B vitamins
- Folate blend of calcium folinate and 5-MTHF
- Methylcobalamin and adenosylcobalamin blend
- Citrate, malate, and picolinate chelates of minerals
- Selenomethionine form of selenium
- Chromium chelidamate arginate form of chromium
- Less fillers
- Capsule form

- Multiple-capsule dose
- Different multivitamin formulas without copper, iron, and iodine
- Decent price

### **Disadvantages:**

- Low amount of vitamin D3
- No vitamin K2
- Possible GMO vitamin C and vitamin E
- No mixed tocopherols
- No L-OptiZinc
- All non-special mineral chelates; the mineral chelates should be glycinate instead of picolinate

I applaud Thorne Research for producing what I believe is the best multivitamin on the market. Thorne updates their multivitamin formula frequently and might eventually address all of the disadvantages I have listed one day soon. A recent example of this is that they changed their selenium from selenium picolinate to the superior selenomethionine.

Thorne also includes the best B vitamin complex on the market within their multivitamin. Basic Nutrients does have some vitamin K1 in their multi and uses decent mineral chelates containing picolinate instead of the standard aspartate found in most multivitamins. Finally, Basic Nutrients does not contain many fillers, and it uses safer fillers including silicon dioxide and L-leucine.

There are a few things that Thorne needs to change to make their multivitamin perfect. They need to increase the amount of vitamin D and magnesium in the supplement. They also need to add some vitamin K2, add non-GMO mixed tocopherols, change the zinc picolinate to L-OptiZinc, and change some of their mineral chelations to glycinate.

Thorne Research Basic Nutrient Five is the multivitamin I am currently using and the one I recommend for most people.

**Recommended daily dosage based on Chapter 7/8:** two capsules based on possible manganese toxicity.

## 2. [Life Extension Mix Capsules](#)

### **Advantages:**

- Multiple forms and high amount of vitamin C
- Mixed tocopherols
- Vitamin D3
- 5'-Phosphate form of B vitamins
- Natural folate from lemon peel
- Pantethine (active form of B5)
- Hydroxocobalamin
- Calcium D-glucarate
- Magnesium blend
- OptiZinc
- Selenium blend
- Copper glycinate
- Crominex form of chromium
- A lot of extra supplements and fruit/vegetable extracts
- Uses multiple capsules

### **Disadvantages:**

- Low amount of vitamin D3
- No vitamin K
- Folate from lemon peel though natural might not be as bioavailable as 5-MTHF
- The greatest amount of magnesium in the blend is magnesium oxide, which is poorly absorbed
- Sodium selenite, an inorganic form of selenium, is in the blend
- Uses sodium molybdate, which is the cheapest form of molybdenum
- Does not have multiple forms, like a multi without copper or with/without iron
- High cost
- Possible use of GMO vitamin E and vitamin C
- Uses excessive fillers (possibly GMO maltodextrin and stearate)

Life Extension technically has some of the best forms of vitamins and minerals in their multivitamin. However, as a whole, the Life Extension multi has more negatives going for it than Thorne's multivitamin does.

Some of the negatives associated with this multivitamin are that we get a large amount of magnesium oxide in the multi, and it has very poor forms of certain minerals like sodium selenite and sodium molybdate. In addition, the Life Extension multivitamin can run upwards of \$70 for a month supply, and fourteen capsules of the multi have to be taken daily. There is also only one version of their multivitamin, as opposed to Thorne, which technically has twelve different versions. You are not able to get a form of Life Extension's multivitamin without copper or also with iron.

I wish Life Extension would release a multivitamin without the added supplements and fruit extracts so that it would cost less. I also wish their multivitamin had fewer filler ingredients. The Life Extension vitamin would also be better if it used 5-MTHF folate, methylcobalamin, no magnesium oxide, no sodium selenite, and glycinate chelates for the rest of the minerals in the multivitamin (molybdenum, manganese). If Life Extension made these modifications and charged around \$40 a month for their multivitamin, they would easily have the best multivitamin on the market.

**Recommended daily dosage based on Chapter 7/8:** fourteen capsules in divided doses.

### 3. [DFH Complete Multi](#)

#### **Advantages:**

- Vitamin D3
- Vitamin E mixed tocopherols
- Vitamin K2
- 5-MTHF
- Methylcobalamin (one mg dose highest out of any recommended multi)
- All minerals are TRACCS chelated

- Extra supplements and vitamins added (ALA, quercetin, TMG, choline)
- Multiple capsules
- Different forms of multivitamin offered (without iron, without copper, and without copper and iron)
- Fewer fillers in supplement
- Low price

### **Disadvantages:**

- No 5'-phosphate forms of B vitamins
- Low vitamin D3 amount
- No L-OptiZinc
- Low amount of magnesium
- No se-methyl-L-selenocysteine or selenomethionine
- Chromium chelate is not polynicotinate
- Stearate filler used in the supplement

The Designs for Health (DFH) multi could easily be the best multivitamin currently offered on the market if they fixed their listed disadvantages. It is one of the few multivitamins that have vitamin K2. This multi has one mg of both 5-MTHF and methylcobalamin, as well. DFH is also currently using the high-absorption TRAACS glycinate chelations for all of the minerals in their multivitamin.

If DFH replaced the selenium, zinc, and chromium with the minerals best specialized supplemental forms, their mineral profile in the multi would be perfect. DFH also needs to add the 5'-phosphate forms of some of the B vitamins in their multivitamin. Finally, DFH should remove the vegetable stearate filler from their multivitamin.

The Complete Multi from DFH easily deserves the number three spot in my recommendation for the best standard multivitamins.

**Recommended daily dosage based on Chapter 7/8:** six capsules daily in divided doses.

**Honorable Mentions:** [XYMOGEN Activ Nutrients](#), [Pure Encapsulations Nutrient 950](#), [Klaire Labs VitaSpectrum Capsules](#)

# **Recommended Am / Pm Multivitamin Complex**

Thorne Fx Multi AM/PM Complex

## **Advantages:**

- Vitamin D3
- Vitamin K1 / K2
- Iodine
- Mixed Tocopherols
- 5'-Phosphate forms of B vitamins
- Folate blend of calcium folinate and 5-MTHF
- Methylcobalamin and adenosylcobalamin blend
- Glycinate chelates of minerals
- Selenomethionine form of selenium
- Chromium chelidamate arginate form of chromium
- Less fillers
- Capsule form
- Multiple-capsule dose
- Split between Am / Pm for maximum absorption
- Decent price

## **Disadvantages:**

- Low amount of vitamin D3
- No iron based formula for women
- Possible GMO vitamin C and vitamin E
- No L-OptiZinc

Thorne Research has finally produced what I believe is the best Am / Pm multivitamin on the market. Thorne updates their multivitamin formula frequently

and might eventually address all of the disadvantages I have listed one day soon. The Thorne Fx Multi AM/PM Complex compared to Thorne's other vitamins changed their mineral chelations to glycinate, added vitamin K2, and mixed tocopherols.

The multivitamin is also divided into an AM / PM dose, which is very nice. The AM dose includes vitamins and supplements that should be taken in the morning: vitamin D3, B12, and curcumin / green tea extract. The PM dose has more magnesium and adds a blend of magnolia and phellodendron to help lower cortisol levels at night.

Thorne also includes the best B vitamin complex on the market within their multivitamin. Finally, Thorne Fx Multi AM/PM Complex does not contain a lot of fillers, and it uses safer fillers including silicon dioxide and L-leucine.

There are a few things that Thorne has to change to make their Thorne Fx Multi AM/PM Complex multivitamin supplement perfect. They need to increase the amount of vitamin D and magnesium in the supplement. They also need to change the zinc picolinate to L-OptiZinc. Thorne Fx Multi AM/PM Complex is a great multivitamin, and I recommend it to anyone that wants to take a two a day multivitamin supplement.

**Recommended daily dosage based on Chapter 7/8:** only take the vitamin packs every other day based on possible manganese toxicity.

## **Recommended Two-A-Day Multivitamin**

### 1. [Thorne Research Basic Nutrients / Two a Day](#)

#### **Advantages:**

- Vitamin D3
- Vitamin K1 / K2
- Iodine
- Mixed Tocopherols
- 5'-Phosphate forms of B vitamins

- Folate blend of calcium folinate and 5-MTHF
- Methylcobalamin and adenosylcobalamin blend
- Glycinate chelates of minerals
- Selenomethionine form of selenium
- Chromium chelidamate arginate form of chromium
- Less fillers
- Capsule form
- Multiple-capsule dose
- Decent price
- Non-GMO

**Disadvantages:**

- Low amount of vitamin D3
- No L-OptiZinc
- Two capsules can lead to poorer absorption

Thorne Research has finally produced what I believe is the best two a day multivitamin on the market. Thorne updates their multivitamin formula frequently and might eventually address all of the disadvantages I have listed one day soon. The two a day compared to the other Basic Nutrient formulas changed their mineral chelations to glycinate, added vitamin K2, and mixed tocopherols. If Thorne makes these changes to their standard Basic Nutrient line and they will have their best multivitamin yet.

Thorne also includes the best B vitamin complex on the market within their multivitamin. Finally, Basic Nutrients does not contain many fillers, and it uses safer fillers including silicon dioxide and L-leucine.

There are a few things that Thorne has to change to make their Basic Nutrients two a day multivitamin supplement perfect. They need to increase the amount of vitamin D and magnesium in the supplement. They also need to change the zinc picolinate to L-OptiZinc. Thorne Research Basic Nutrients / Two a Day is a great multivitamin, and I recommend it to anyone that wants to take a two a day multivitamin supplement.

**Recommended daily dosage based on Chapter 7/8:** one capsule based on possible manganese toxicity.

# Recommended Liquid Multivitamin

[intraMAX](#)

## **Advantages:**

- Amino acids, fatty acids, digestive enzymes, probiotics, trace minerals, herbs, and fruit/vegetable mixture that you can imagine all in one convenient liquid multivitamin
- Contains mixed tocopherols and tocotrienols
- Methylcobalamin,
- 5'-phosphate forms of B vitamins
- Chromium polynicotinate
- Has a magnesium blend
- Selenomethionine
- Zinc blend
- Vitamin K1
- Contains no fillers

### **Disadvantages:**

- Cost (\$70-80 for one month)
- Must be refrigerated
- No vitamin K2
- *Bacillus subtilis* in probiotic mixture
- Extremely low amount of vitamin D3
- No non-iron formula for men
- Uses the sodium molybdate form of molybdenum
- Has potassium aspartate
- Added phosphate for unneeded phosphorus supplementation

Intramax is the best liquid multivitamin currently offered because this supplement throws in everything, including the kitchen sink. This liquid vitamin contains supplements (chlorella, MSM, fulvic acid, CoQ10, R-lipoic acid, etc.), amino acids, fatty acids (omega 3, 6, 9), digestive enzymes, probiotics, trace minerals, herbs (aloe vera, schizandra, licorice, ginkgo, and more), and fruit and vegetable mixture. Intramax also has a decent amount of magnesium in it.

I would recommend Intramax as the best high-end multivitamin period if they fixed some of the disadvantages I listed. I would not mind the paying the price for the multivitamin so much if they added vitamin K2, increased the vitamin D3, took out the iron in a different version for men, and changed some of the mineral chelations to their better forms. If they were able to do this, their liquid multivitamin would have it all. The best vitamins and minerals, supplements, amino acid blend, trace minerals, herbs, fruit and vegetable mixtures, and all the proper fatty acids that you would ever need!

**Recommended daily dosage based on Chapter 7/8:** ½ capful based on possible manganese toxicity.

**Honorable Mention:** [Natural Vitality Organic Life Vitamins](#)

## **Recommended Powdered Multivitamin(s)**

*(Both recommended powdered multivitamins are tied for first place).*

#### 1A. Life Extension Mix Powdered Multi (without copper)

##### **Advantages:**

- Multiple forms and high amount of vitamin C
- Mixed tocopherols
- Vitamin D3
- 5'-Phosphate form B vitamins
- Natural folate from lemon peel
- Pantethine (active form of B5)
- Hydroxocobalamin
- Calcium D-glucarate
- Magnesium blend
- OptiZinc
- Selenium blend
- Crominex form of chromium
- A lot of extra supplements and fruit/vegetable extracts in the multi in powder form and sweetened with stevia

##### **Disadvantages:**

- Low amount of vitamin D3
- No vitamin K
- Folate from lemon peel, though natural, might not be as bioavailable as 5-MTHF
- The greatest amount of magnesium in the blend is magnesium oxide which is poorly absorbed
- Sodium selenite, an inorganic form of selenium is used in the blend
- Uses the sodium molybdate form of molybdenum
- Does not have multiple forms, like a multi without copper or with/without iron

- High cost
- Possible GMO vitamin E and vitamin C

The main differences between the powder form of Life Extension's multivitamin and the capsule form of their multi are the powdered delivery system and that the powdered multivitamin has fewer fillers in the product than the encapsulated product.

**Recommended daily dosage based on Chapter 7/8:** three scoops in divided doses.

### 1B. [Klaire Labs VitaSpectrum](#)

#### **Advantages:**

- Multiple forms of vitamin A—some from algae
- Mixed tocopherols
- Vitamin D3
- Vitamin K1
- 5'-Phosphate form of B vitamins
- Folinic acid/5-MTHF blend
- Methylcobalamin/adenosylcobalamin blend
- Magnesium glycinate
- Zinc glycinate
- Chromium polynicotinate/glycinate blend
- Mineral chelates use glycinate
- Great price
- Powder form
- No sweetener

#### **Disadvantages:**

- Low amount of vitamin D3
- No vitamin K2

- Selenium amino acid chelate is unknown
- Boron amino acid chelate is unknown
- Vitamin C and E are probably GMO
- Iodine is from kelp
- No riboflavin 5'-phosphate

Klaire Labs Powdered Vitaspectrum has distinct advantages, even more than some of the other recommended listed multivitamins above.

Klaire Labs has one of the best multivitamin powders I have ever seen for the cost. First, as far as vitamins are concerned, it has multiple forms of vitamin A, mixed tocopherols, vitamin K1, includes the 5'-phosphate forms of B vitamins, folic acid/5-MTHF blend, and a methylcobalamin/adenosylcobalamin blend. Vitaspectrum also uses glycinate chelations of minerals, as well. Finally, the only “filler” added to the powder is natural berry pomegranate flavor, and the powdered multivitamin has a decent price!

The only real disadvantage this powdered multivitamin has is that we do not know what form of selenium and boron the chelates are. All other problems could easily be forgiven if I knew what the chelations were and if they used glycinate.

**Recommended daily dosage based on Chapter 7/8:** one scoop.

## **Recommended Prenatal Multivitamin**

[Thorne Research Basic Prenatal](#)

### **Advantages:**

- Vitamin D3
- Vitamin K1
- 5'-Phosphate forms of B vitamins

- Folate blend of calcium folinate and 5-MTHF
- Methylcobalamin/adenosylcobalamin blend
- Citrate, malate, and picolinate chelates of minerals
- Selenomethionine form of selenium
- Chromium chelidamate arginate form of chromium
- Less fillers
- Capsule form
- Multiple capsules
- Decent price

### **Disadvantages:**

- Low amount of vitamin D3
- No vitamin K2
- Possible GMO Vitamin C and Vitamin
- No mixed tocopherols
- Not enough vitamin D3
- No L-OptiZinc
- All non-special mineral chelates; the mineral chelates should be glycinate instead of picolinate
- Not enough calcium and magnesium
- Iron picolinate instead of the superior iron bisglycinate

There is not much difference between the Thorne Basic Nutrients multivitamin and their prenatal vitamin.

Thorne still includes the best vitamin B complex on the market within their multivitamin. Their prenatal has the best source of folate, 5-MTHF, which is very important for fetal development and in protecting the fetus from neural tube defects. Thorne's prenatal does have some vitamin K1 in the multi, and it uses decent mineral chelates containing picolinate instead of the standard aspartate found in most multivitamins. Finally, Thorne's prenatal does not contain a lot of fillers and uses safer fillers, including silicon dioxide and L-leucine.

With the prenatal, though, you will get lower amounts of B vitamins and not enough calcium and magnesium for pregnant women in my opinion. With Thorne's prenatal, you also only have to take three capsules daily instead of six

capsules daily with Basic Nutrients. Thorne's prenatal also uses iron picolinate. They should instead use the superior iron bis-glycinate, which is known to cause less constipation than any other iron chelation. Even with these mentioned flaws, I still believe that Thorne's prenatal is the best for pregnant women.

**Recommended daily dosage based on Chapter 7/8:** two capsules based on possible manganese toxicity.

## **Recommended Natural Multivitamin**

### [Genesis Today Organic Total Nutrition](#)

#### **Advantages:**

- 100% Organic multivitamin
- From plant sources
- Non-GMO
- Natural folate
- Only "filler" is xanthan gum
- No yeast
- Decent price
- Only true "natural" multivitamin
- Liquid
- Organic chlorella/blue-green algae blend

#### **Disadvantages:**

- Low concentrations of most minerals
- No vitamin D3
- Plant-based nutrients might be hard to absorb because of phytic acid

Organic Total Nutrition is the closest to a natural multivitamin that one can get. All of the vitamins and minerals in this multivitamin come from food sources. It is also certified organic and 100% GMO-free! The multivitamin is also yeast free and does not contain any vitamins and minerals derived from brewer's yeast!

The main problem with this natural multivitamin compared to other multivitamins is that most of the supplemental values of this multivitamin are lower than needed. In addition, since it is vegan, it contains no vitamin D3 whatsoever. I would consider the multivitamin inferior even to most of the synthetic multivitamins out there, but Organic Total Nutrition is the best natural multivitamin for sale.

**Recommended daily dosage based on Chapter 7/8:** two tbsp.

## **Recommended Children's Multivitamins**

### **Best Liquid Children's Multivitamin**

[Natural Vitality Kids Calm](#)

#### **Advantages:**

- Vitamin D3
- 5'-Phosphate forms of B vitamins
- Methylcobalamin
- Good amount of Natural Calm magnesium
- Zinc picolinate
- Fish oil
- Fruit and veggie blend
- Amino acid and Concentrace Trace Minerals blend
- DMAE
- Stevia

## **Disadvantages:**

- Folic acid
- Low amounts of vitamin D
- Low amounts of B12
- Not all necessary minerals are in the multi
- Potassium sorbate and sodium benzoate are preservatives in the liquid multi
- No iron

I believe that Natural Vitality Kids Calm is the best standard children's liquid multivitamin that is available currently.

The Natural Calm liquid multivitamin does have more magnesium in it than most adult multivitamins. This liquid multivitamin also has 5'-phosphate versions of B vitamins, uses methylcobalamin, and has a trace mineral blend. Finally, they used stevia to sweeten the liquid multivitamin instead of using sugar!

There are sadly many problems with this multivitamin, however. The biggest problems facing this multivitamin are that it uses folic acid; the multivitamin is missing essential minerals including iron, and the use of sodium benzoate in the multivitamin that might combine with vitamin C to form the cancer-causing byproduct benzene.

**Recommended daily dosage based on chapter 7/8:** two tbsp.

## **Best Children's Specialty Liquid Multivitamin**

[intraKID](#)

## **Advantages:**

- Every supplement, amino acid, fatty acid, digestive enzyme, probiotic, trace mineral, herb, and fruit/vegetable mixture you can imagine all in one convenient liquid multi
- Mixed tocopherols and tocotrienols

- Methylcobalamin
- 5'-Phosphate forms of B vitamins
- Chromium polynicotinate
- Magnesium blend
- Selenomethionine
- Zinc blend
- Vitamin K1
- No fillers

### **Disadvantages:**

- Cost (\$70-80 for one month)
- Must be refrigerated
- No vitamin K2
- Extremely low amount of vitamin D3
- Sodium molybdate form of molybdenum
- Potassium aspartate
- Phosphate added for extra phosphorus

As you can tell by the advantages and disadvantages listed, there is little difference between the Intrakid liquid multivitamin and the Intramax liquid adult multivitamin discussed earlier. The only main difference in this one is that it has lower levels of some vitamins and minerals to accommodate the lower daily intakes for children.

Intrakid is the best children's specialty liquid multivitamin because this supplement throws in everything including the kitchen sink. This liquid vitamin has supplements (chlorella, MSM, fulvic acid, CoQ10, R-lipoic acid, etc.), amino acids, fatty acids (omega 3, 6, 9), digestive enzymes, probiotics, trace minerals, herbs (aloe vera, schizandra, licorice, ginkgo, etc.), and fruit and vegetable mixture. Intrakid also has a decent amount of magnesium in the liquid multi, as well.

Same as with Intramax above, I would recommend Intrakid as being the best high-end multivitamin for children period if they changed some of the problems I have discussed above. I would not mind paying the price so much if they would add vitamin K2, increase the vitamin D3, and modify some of the mineral chelations. If they were able to do that, this children's liquid multivitamin would have it all. This

multivitamin might have too many vitamins/minerals/supplements in it for most children, which is why I do not recommend its use in all cases. Some of the extra supplements that are included in the multi, like most of the herbs and supplements are not known to be safe for use in children yet. Because of this potential risk, I would recommend its use for a teenager instead of a younger child.

**Recommended daily dosage based on Chapter 7/8:** ½ capful based on possible manganese toxicity.

## **Best Children's Capsule Multivitamin**

### [Pure Encapsulations Junior Nutrients](#)

#### **Advantages:**

- Vitamin D3
- Vitamin K1
- L-5-MTHF
- 5'-Phosphate forms of vitamin B2 and vitamin B6
- The form of B12 in the supplement is methylcobalamin
- The form of chromium in the supplement is polynicotinate
- Selenomethionine
- Forms of mineral chelates were citrate, glycinate, and malate
- No fillers in multivitamin
- Multiple capsules

#### **Disadvantages:**

- Supplements in capsule form are usually difficult for young kids to take
- No vitamin K2
- Not enough vitamins and minerals dosage wise

The Pure Encapsulations Junior Nutrients children's multivitamin is technically the best standard multivitamin for children.

The Pure Encapsulations multivitamin uses great forms of B vitamins; the mineral chelations are top notch, and it has no fillers. The Pure Encapsulations children's multivitamin also is one of the few to offer vitamin K.

My only concerns with the supplement are that capsules can be difficult to swallow for younger children and that it does not have vitamin K2. I also wish the multivitamin had more magnesium, selenium, and vitamin D. Overall though; the Pure Encapsulations Junior Nutrients children's multivitamin is one of the best multivitamins that you can give your child or teenager.

**Recommended daily dosage based on Chapter 7/8:** two capsules based on possible manganese toxicity.

**Honorable Mention:** [Children's Basic Nutrients Thorne Research](#)

## Chapter 6

### **Hypervitaminosis and Supplements**

There is one significant drawback when supplementing vitamins and minerals daily individually or even when taking a multivitamin.

You can supplement elevated amounts of certain vitamins and minerals that may be harmful to your health.

Now granted most of the multivitamins that you purchase the dosages will be low enough so that you will not have any issues with overdose toxicity. Even though there is a lower chance of toxicity with a multi, it is important to understand overdose ranges of certain vitamins so that toxicity side effects from supplementation do not occur.

### **Vitamin A**

Hypervitaminosis A is a real concern when supplementing with retinol supplements or multivitamins that are high in retinol A. I suggest that you get a serum retinol test before supplementing with large amounts of retinol vitamin A. The daily upper tolerable limit of vitamin A intake for most adults is 4,000 IU. Remember if you consume animal liver or cod liver oil on a regular basis, you will ingest copious amounts of vitamin A; therefore, daily supplementation would not be needed. If you are not tested, the highest amount I can safely recommend is 5,000 IU weekly of vitamin A palmitate. Remember, beta-carotene is processed differently by our body's than retinol so higher doses of beta-carotene, 10,000 IU daily should be safe if you have an adequate liver.

Though it might be possible to greatly reduce the chance of hypervitaminosis A with proper vitamin D supplementation according to the Weston Price Foundation, I still like to err on the side of caution until enough research is produced for large vitamin A doses combined with proper vitamin D supplementation.

### **Hypervitaminosis A symptoms:**

Blurred Vision, Pain, Dizziness, Headache, Hypercalcemia, Liver Damage, Nausea, Poor Weight Gain, Skin and Hair Issues, Hair Loss, Higher Sensitivity to Sunlight, Jaundice, Uremic Pruritus, Vision Changes, Vomiting

## **Vitamin B3**

Niacin is mainly taken in large doses for lowering cholesterol in the mainstream medical community (the drug Niaspan). For the cholesterol-lowering effect to occur 1.5 to six grams of niacin, are taken daily. Niacin appears to change the way the liver metabolizes cholesterol by lowering total LDL and triglycerides and increasing HDL. Flushing (and possible severe itching) will occur at these doses in most people because of elevated PGD2 (prostaglandin) and increased serotonin production which causes massive vasodilation. This increase in vasodilation might be important in some people that have heart issues, but the numerous risks of mass dosing niacin make it not worth it for most. I recommend at most 500 mg of niacin a day. If you choose to supplement higher doses of niacin more than one gram daily, have a doctor monitor your liver function for safety.

Niacinamide is different from niacin and is the active form of vitamin B3 that the body uses. Niacinamide is safer with a lot fewer side effects, but I would not go higher than 3,000 mg of niacinamide daily because of evidence of potential liver damage.

### **Niacin Toxicity Symptoms:**

Flushing, Liver Damage, Hyperuricemia (increased uric acid leads to gout), Stomach Upset, Elevated Blood Sugar, Cardiac Arrhythmia

### **Recommended Supplement of Vitamin B3:**

[Doctor's Best Real Niacin \(Extended Release\) 500mg](#)

## **Vitamin B6**

Vitamin B6 is one of the most important B vitamins that you can take for optimal nerve health. B6 also plays important roles in amino acid metabolism, gluconeogenesis, neurotransmitter synthesis, and lipid metabolism. B6 can also help reduce nausea and vomiting. B6 is even prescribed for morning sickness in pregnant women. Even though proper vitamin B6 supplementation is important, large doses can do more harm than good to the nerves in the body and even cause nerve damage. Most of the time B6 toxicity occurs at high doses of the vitamin 1,000 mg daily over time has been shown to cause neuropathy. Even lower doses over time (100 – 200 mg) have been shown to cause neuropathy. Most of the time the neuropathy is reversible if the supplementation is stopped in time. I recommend that most people take no more than 50 mg of vitamin B6 daily. If you require the use of more B6 for nerve issues, try other supplements like R-lipoic acid to help with nerve function instead.

### **B6 Toxicity Symptoms:**

Neuropathy

### **Recommended Supplement of Vitamin B6:**

[Thorne Research Pyridoxal 5'-Phosphate](#)

## **Vitamin D**

### **Vitamin D the Hormone That Will Change Your Life**

Vitamin D is a fat-soluble steroid that can be produced endogenously (within our body) from proper sunlight exposure (UV-B), or obtained from supplementation or in smaller quantities from our diet. There are different forms of vitamin D that our body recognizes. The first form is ergocalciferol, which is vitamin D that is produced by fungi. It has a poor conversion to calcidiol (a storage form of vitamin

D3), so I do not recommend it. 25-hydroxy vitamin D, also known as calcidiol, is the inactivated form or storage form of vitamin D3. Calcidiol is the form of vitamin D3 that we get when we take supplements and the form that our body produces from sunlight exposure.

Calcitriol is the active form of vitamin D our body uses to provide homeostasis, support our innate immune system, and help improve our overall health. Most of the time your doctor tests only your 25-hydroxy (storage form) but not 1-25 hydroxy (active form). It is necessary for your 1-25 hydroxy levels also to be checked, so you know if your vitamin D is being converted correctly to improve your health.

Our kidneys and liver convert 25-hydroxy to 1-25 hydroxy, or calcitriol, when needed which is the active form of vitamin D3. The pathway for vitamin D conversion occurs from the skin (vitamin D) to the liver (25-hydroxy) to the kidneys (1-25 hydroxy), and then to specific VDR targets, where needed by the body. Recent studies into vitamin D conversion have confirmed that many localized tissues throughout the body can convert vitamin D when needed instead of only the kidneys converting it.

If your vitamin D is not being correctly converted into the active form, you may not be getting much benefit from having normal 25-hydroxy levels. Also, if your 1-25 hydroxy levels are too high and not enough vitamin D is being stored (low 25-hydroxy), immune dysregulation may occur.

Endogenous production of vitamin D creates 25-hydroxy, but studies have shown that the body can regulate the production and conversion of endogenously produced 25-hydroxy to the active form 1-25 hydroxy better; therefore, there are a lot fewer issues associated with vitamin D toxicity if the body primarily produces vitamin D. The body even has a negative feedback loop with endogenous produced 1-25 hydroxy, which inactivates the conversion of vitamin D to 25, then to 1-25 hydroxy. The body excretes the inactivated excess, and it helps prevent against vitamin D hypervitaminosis. There are few if any known causes of endogenous vitamin D toxicity, most occurs from vitamin D over supplementation. The chance of developing vitamin D toxicity might also be reduced if you ingest enough retinol (vitamin A) in your diet. Sources of retinol in our diet include animal liver, cod liver oil, tuna, butter, milk, and eggs. Symptoms of vitamin D toxicity (hypervitaminosis D) include dehydration, vomiting, decreased appetite, increased

serum calcium, soft tissue calcification, fatigue, constipation, muscle weakness, and irritability.

Blood levels of 25-hydroxy and 1-25 hydroxy for proper health differ between each person and the season. For most people if you are endogenously producing vitamin D in the summer you want your 25-hydroxy level to be between 60 – 100 ng/ml and you want your 1-25 hydroxy level to be within normal range. In the winter, you want your 25-hydroxy level to be between 40 – 70 ng/ml and you want your 1-25 hydroxy level to be within normal range. Depending on where you live in the world and your genetics, your vitamin D levels should be lower in the winter to match the waning of endogenous vitamin D production that occurs from the lack of UV-B. If you only supplement with vitamin D, your levels should be between 50 – 70 ng/ml year-round. Check to make sure that 25-hydroxy is converting properly to 1-25 hydroxy by getting blood tests of both every few months.

## **How Does Vitamin D Improve Our Health**

Vitamin D does a lot to improve our overall health:

- It helps with absorption of dietary phosphorus, [magnesium](#), iron, manganese, zinc, and calcium. Proper calcium absorption and metabolism are important because you want it to be concentrated in your bones, not the arteries. Magnesium should also be taken when one is trying to increase their vitamin D level; it helps with conversion of 25-hydroxy to 1-25-hydroxy and prevents arterial calcification from regulating calcium homeostasis. Vitamin D also helps to regulate phosphorus use and excretion by the body.
- Plays a role in proper insulin secretion and may help prevent or improve diabetes type 1 and 2.
- It prevents osteoporosis and may help prevent its effects if you already have the condition.
- It possibly decreases the risk of some types of cancer by reducing cell proliferation (rapidly dividing cells). The body needs cell proliferation for wound healing and growth, but cancer may develop if too much occurs unchecked. It may also help treatment of some types of cancer when vitamin D levels (25 and 1-25 hydroxy) are balanced.

- It normalizes blood pressure by inhibiting renin, an enzyme our kidney produces to regulate blood pressure through the renin-angiotensin system. Elevated renin may lead to high blood pressure.
- Vitamin D helps to regulate the immune system properly and helps to prevent leaky gut by regulating T cells to protect the GALT. Helps reduce Th1 (inflammation) and Th2 (histamine) dominance.
- Endogenous Vitamin D production reduces the production of the inflammatory cytokines, TNF-alpha, and IL-6 (supplemental vitamin D may increase some cytokines [anti and inflammatory] in people who are deficient). Vitamin D reduces pathogen load by activating the immune system to produce cathelicidin an antimicrobial peptide.
- It reduces your chances of developing or eliminates psoriasis, an inflammatory skin condition if your vitamin D production mainly comes from sunlight exposure. Endogenous vitamin D production might be why in studies psoriasis improves when exposed to proper light therapy.

## **How Does One Appropriately Increase Their Endogenous Vitamin D Production?**

For most people, the best way to increase your vitamin D levels is proper sunlight exposure. Sunlight is free. The only cost to you is your time, and we all need to be outdoors more often in this modern world. To make vitamin D from the sun, you have to be exposed to UV-B rays from the sun. UV-B does not penetrate the skin as deep as UV-A, so less photodamage will occur to the skin when used correctly. There are many different factors that influence how much vitamin D we can produce from UV-B exposure, those include:

- UV-B radiation exposure mainly occurs from 10 AM to 5 PM, but the period can be shorter depending on how far away you are from the equator. The farther you live from the equator, live in a smoggy, polluted environment, or reside in a climate that is cloudy and rainy, the harder it may be to get proper sunlight and produce vitamin D endogenously depending on the time of year.
- Your age also affects how much vitamin D your body will produce. The older you are, the less vitamin D will be endogenously produced.
- The higher the UV index, the more vitamin D will be produced, but it also increases the likelihood of your getting sunburnt.

- The higher your altitude, the more vitamin D you will produce from intense exposure to UV-B radiation.
- Do not sit behind glass and let the sunlight hit your skin; glass blocks most of the UV-B radiation. Therefore, you would not produce any vitamin D.
- The darker your skin, the longer sunlight exposure is needed to produce vitamin D endogenously. The more melanin in one's skin (the pigment that gives our skin color) the harder it is for one to get a sunburn, but it does make it harder to produce endogenous vitamin D.
- People with chronic kidney disease or kidney failure might have a harder time producing vitamin D endogenously.
- Obesity can also be a factor. The more fat mass you have, the harder it is for vitamin D to be bioavailable.
- Magnesium deficiency can also make it harder to increase endogenous vitamin D production from the sun.
- Genetic variations in VDR, CYP2R1, CYP27A1, and DBP (vitamin D-binding protein) can make it difficult to produce or convert endogenous vitamin D. People of African descent have a greater chance of DBP mutations, making it more difficult to produce endogenous vitamin D.

Endogenous vitamin D production may be difficult depending on where you live in the world, but there are ways to maximize your endogenous vitamin D production. First, I suggest the app [Dminder](#) on your phone to help with this. If you input where you live, it can tell you when you can produce vitamin D from the sun and can track how much you are producing depending on your skin type and the amount of clothing covering your body. It even has a light sensor that can help determine how much vitamin D is being produced even if it is cloudy day outside. It can also keep track and graph the amount of vitamin D you are producing from sunlight exposure over time. It is best to start out with 10 – 20 minutes of proper sunlight exposure to prevent from burning if you have fairer skin. Proper ingestion or supplementation of omega 3 fatty acids might further help to avoid sunburn, excessive inflammation from the sun, and photoaging of the skin. Endogenous vitamin D production from the sun is very safe. If you are concerned about skin cancer, just do not overdo your sunlight exposure long enough to get a sunburn. Ingest enough [omega 3 fatty acids](#) (seafood) and healthy saturated fats (extra virgin coconut oil, butter, pastured meats) in your diet to protect yourself from photo-oxidation (sunlight damage). Some people swear by the supplement [astaxanthin](#) to protect their skin from sunlight damage.

## **What should you do, if you are unable to produce enough Vitamin D from sun exposure?**

- The proper use of a UV-B low-pressure tanning bed may help you in producing endogenous vitamin D. Wear UV eye protection while you are in the tanning bed to protect them from photo-oxidation.
- [Rayminder Model 2](#), which is a vitamin D producing lamp, would also help increase endogenous vitamin D production and is FDA approved. Wear UV eye protection while you are using a lamp to protect them from photo-oxidation. I would also shine the lamp behind my head at a short distance, if possible. Be careful with the bulb it does contain mercury.
- Finally, you can use special UVB producing bulbs in your fixtures, but they have to be away from your body when in use, preferably hung shining down towards your back. In addition, these bulbs may not fit a standard light socket and may need to be modified to work properly in your house. I would consult an electrician first before use, and use with caution. You also need to wear UV eye protection while using UVB producing bulbs to protect your eyes from photo-oxidation damage. Some examples of bulbs would be, [Osram Vitalux](#) and [Exo Terra](#) (be careful with the bulb because it does contain mercury).

## **So How Does Gut Health and Genetics Play Into Developing Healthy Vitamin D Levels?**

Some people, depending on their lifestyle or genetics (VDR, DBP, CYP2R1, and CYP27A1), are not able to produce or convert supplemental vitamin D very well and in those people, more UV-B exposure to help convert or produce 1-25 hydroxy may be needed. If vitamin D supplementation is required it is still important to get sunlight (UV-B mainly) within reason whenever possible to try to help with the endogenous conversion of 25-hydroxy to 1-25 hydroxy. If you are supplementing with vitamin D, blood serum tests of 25-hydroxy and 1-25 hydroxy need to be performed more often by your doctor to prevent vitamin D toxicity and to make sure proper conversion is taking place.

Microbial overgrowth and increased inflammation from gut issues can change the body's need for vitamin D. In someone that is having chronic infections; it is not odd to see their blood test results show that they have high 1-25 hydroxy and low 25-hydroxy. Elevated 1-25 hydroxy is one way the body tries to fight the overgrowth through chronic immune activation and to activate VDR receptors to enhance the immune system. Their VDR receptors become changed epigenetically, possibly from your chronic infections or environment. 1-25 vitamin D increases CD14 gene expression, which helps the immune system recognize endotoxins and eliminate them. Finally, the less active your VDR receptors are in the gut, the more vulnerable you are to endotoxins and leaky gut.

“Autoimmune” conditions that improve once vitamin D is normalized in the body and gut health is restored include:

- Alzheimer's
- Diabetes (type 1 and 2)
- IBD
- Multiple Sclerosis
- Parkinson's disease
- Psoriasis
- Rheumatoid arthritis
- Systemic lupus erythematosus

The best way to help correct this imbalance is to Fix Your Gut, reduce the chronic infection, fix your circadian rhythm, reduce Th1 / Th2 dominance, and maintain proper sunlight exposure. Over time, the VDR receptors should change epigenetically and facilitate proper vitamin D metabolism, returning your markers to normal.

Proper sunlight exposure is something that most people can do for free to improve their overall health. Not enough people in today's modern world get enough sunlight, and most people are vitamin D deficient. Endogenous vitamin D is very important for proper health and can be obtained easily from the sun in most cases. Get your daily sun!

### **Recommended Supplement of Vitamin D3:**

[Jarrow Formulas Vitamin D3 5000IU](#)

## Vitamin E

Vitamin E toxicity is rare, but nonetheless, hypervitaminosis E is still very possible. Toxicity symptoms have been noted at doses greater than 1,500 IU daily. I do not usually recommend vitamin E supplementation outside of what is found in a multivitamin. Most people get adequate amounts of vitamin E in their diet, and deficiency is rare. Vitamin E supplementation might help with heart disease and people suffering from diabetes by lowering overall oxidative stress. Avoid vitamin E that is synthetically made (dl) and try to use a supplement that is non-GMO and has mixed tocopherols.

If you need to supplement with vitamin E, take 400 IU daily at the most, but you can take up to 1,000 IU daily in divided doses if needed. Also, discontinue all vitamin E supplementation at least a month before elective surgery and notify your doctor if you are taking vitamin E because it can be considered a blood thinner.

### **Hypervitaminosis E Symptoms:**

Possible Impaired Blood Clotting, Possible Hemorrhage, Vitamin K Deficiency, Blotchy Skin, Increased Triglycerides.

### **Recommended Supplement of Vitamin E:**

North American Herb & Spice Purely-E

## Vitamin K

Hypervitaminosis K only applies to people who are using blood-thinning medications like Warfarin that inhibits vitamin K in the human body. Vitamin K has no upper tolerable limit in the body, and there are no known toxicity issues with any natural vitamin K1 / vitamin K2 supplement. Vitamin K3 (menadione) on the other hand which is synthetic vitamin K, interfered with the function

glutathione and is known to cause liver failure with its use. It is banned in the United States.

If you are taking vitamin K inhibitors, talk to your doctor about supplement low doses vitamin K supplements so that a proper balance between the medication and vitamin K can be achieved. Important information about this can be found here: [http://www.lef.org/magazine/mag2007/jun2007\\_report\\_vitamink\\_01.htm](http://www.lef.org/magazine/mag2007/jun2007_report_vitamink_01.htm).

**Recommended Supplement of Vitamin K:**

[Life Extension Super K Supplement](#)

# Chapter 7

## Hypermineralosis and Supplements

Hypermineralosis rarely occurs if one is cautious of their mineral supplementation amounts and daily dietary intake of minerals. Hypermineralosis can occur though in people taking multiple supplements daily without proper knowledge. Some minerals more than others should be supplemented using caution. All minerals have daily upper tolerable intake limits, and I will list them separately from the individual minerals that are in this chapter that require more caution with supplementation. Remember, upper tolerable intake limits are the highest dose that one can take daily without developing hypermineralosis in most cases, but this dose is not the true therapeutic dose of the mineral for most people and should only be used under doctor's supervision.

### Mineral Daily Upper Tolerable Intake Limits

**Boron** – Twenty mg daily

**Chromium** – 1,000 mcg (Chromium Picolinate at this dosage has been linked to kidney damage in a few reported instances)

**Iodine** – Fifty mg daily under medical supervision, if not under medical supervision ten mg daily

**Molybdenum** – Two mg daily

**Nickel** – One mg daily (do not recommend supplementation due to allergies associated with its use)

**Phosphorus** – Four grams daily (including dietary intake)

**Potassium** – 1,000 mg daily from supplementation, 10,000 mg dietary + supplementation maximum daily intake

**Sodium** - Ten grams daily

**Vanadium** – Two mg daily

## **Calcium**

**Upper Tolerable Limit (Supplementation + Dietary)** – 2,500 mg daily

**Recommended Daily Supplementation Limit** – 1,000 mg

Hypercalcemia rarely occurs because of diet alone. It is possible for people with kidney issues, hyperparathyroidism, malignant tumors, lithium use, hypervitaminosis A, or if you are suffering from hypervitaminosis D to suffer from hypercalcemia from dietary sources. Most people develop hypercalcemia from taking in too much calcium from supplements and dietary choices. You also have to be careful when using the antacid calcium carbonate in large doses (doses outside recommended therapeutic range on the drug notes, also known as milk-alkali syndrome) which can easily cause hypercalcemia.

Symptoms of mild/moderate hypercalcemia include loss of appetite, nausea, vomiting, constipation, abdominal cramps, dry mouth, thirst, bone pain, depression, kidney stones, and frequent urination. Abnormal heart rhythm and calcification of arteries can also occur. Mild to moderate symptoms of hypercalcemia are common if your total calcium blood level is around 12 mg/dl.

Symptoms of severe hypercalcemia, on the other hand, is very serious and include confusion, delirium, and coma. Severe symptoms of hypercalcemia are common if your total calcium blood level is above 15 mg/dl.

Hypercalcemia is usually treated by increased hydration to eliminate calcium; diuretic may also be needed for greater kidney clearance of calcium.

Bisphosphonates and calcitonin may also be given to prevent bone reabsorption of calcium.

Calcium is not needed to be supplemented by most people because enough is usually obtained through the diet. Some women with osteoporosis may choose to supplement with calcium to increase bone strength. Remember to supplement with magnesium if you choose to take a calcium supplement. Supplementation of

magnesium helps the body eliminate excess calcium, and maintain mineral homeostasis. Remember if you do supplement with calcium, supplement with the superior citrate form and no more than 500 mg every twelve hours for maximum absorption.

## **Copper**

**Upper Tolerable Limit (Supplementation + Dietary) – 10 mg daily**

**Recommended Daily Supplementation Limit – 2 mg**

Like most instances of hypermineralosis, copper toxicity rarely occurs from dietary sources alone. Copper toxicity in the general population occurs from eating toxic amounts of leached copper from uncoated copper cookware, ingestion of excess copper in drinking water, occupational exposure to excess copper, excessive amounts of copper from supplementation, and can occur if you have Wilson's disease.

Wilson's disease is an inherited genetic disorder in which excess copper accumulates in tissues due to a mutation in the ATP7B gene. This disease if left untreated will eventually lead to liver failure. People with Wilson's disease should avoid copper cookware, copper-containing supplements, and food that is high in dietary copper.

Symptoms of mild/moderate copper toxicity include loss of appetite, nausea, vomiting, melena, jaundice, abdominal cramps, low zinc serum levels, and diarrhea.

Symptoms of severe copper toxicity include severe liver and kidney failure, jaundice, and coma.

The heavy metal chelation agent's penicillamine and dimercaprol are used to remove excess copper from the body but can be quite harsh chelating agents.

Excessive copper intake, more than two mg daily, can upset the zinc to copper ratio in the body and can create a zinc deficiency. If you take two mg of copper daily for a few months, fifteen mg of zinc supplementation daily might also be

needed to help stop the possibility of developing a zinc deficiency. One study also mentioned that supplementation of copper at eight mg daily for long term instances might lower the immune system while another study showed that supplementation of long-term copper at that dosage causes no such medical issue. Excessive copper buildup and toxicity can make adrenal fatigue symptoms worse, so limit copper intake during zinc supplementation until adrenals have healed. Unbounded copper ingestion from supplements may cause issues with copper overload and problems with inhibiting ceruloplasmin. For most people ingestion of liver once or twice a week should be sufficient for ceruloplasmin bonded copper.

The recommended form of copper for supplementation is copper glycinate.

## **Iron**

**Upper Tolerable Limit Supplementation in Men That Are Not Anemic** – zero mg

**Upper Tolerable Limit Supplementation in Men / Women That Require Iron Supplementation** – 45 mg

Iron overload is of most concern out of any of the hypermineralosis conditions. If you suffer from hemochromatosis or have the medical conditions sideroblastic anemia, pyruvate kinase deficiency, or thalassemia major, dietary iron intake and supplementation need to be monitored by a doctor because iron overload is a real possibility. If you are a non-anemic male, iron supplementation should also be monitored by a doctor as well. Iron supplementation should be monitored in children as well; accidental iron overload/poisoning is the number one cause of poisoning fatalities in children under six years of age. Menstruating women / pregnant women might require iron supplementation, but unless indicated by the doctor no more than 45 mg should be taken daily.

Most people get enough iron in their diet and supplementation is not needed. Vegans might have to supplement with iron because plant-based iron is not very bioavailable.

Symptoms of acute iron overload/toxicity include nausea, vomiting, abdominal pain, tarry stools, lethargy, weak and rapid pulse, low blood pressure, and fever. If poisoning dosages are large enough, organ failure and coma can occur.

Symptoms of long-term iron overload (seen in conditions like hemochromatosis) include cirrhosis of the liver, diabetes, cardiomyopathy, arthritis, testicular failure, tanning of the skin, and joint/bone pain.

Diagnosis of iron overload can be made from a serum ferritin blood test. Diagnosis of systemic iron deposits and damage occurred in the body can be seen by performing a liver biopsy and an MRI. Genetic testing for hemochromatosis can be done by testing the HFE (human hemochromatosis protein) gene.

Treatments for iron overload include bloodletting and chelating agents like deferoxamine.

I do not recommend the supplementation of iron as it inhibits ceruloplasmin and may feed gut overgrowth.

If you need to supplement with iron the best form of iron to use is iron bisglycinate. Most forms of iron tend to cause gastrointestinal upset and constipation, iron bisglycinate seems to be the best-absorbed form, and least likely to cause those issues.

## **Manganese**

**Upper Tolerable Limit (Supplementation + Dietary) – 11 mg daily**

**Recommended Daily Supplementation Limit – 1 mg**

Manganese hypermineralosis is a real threat with most of the multivitamin supplements on the market today. Manganese deficiency in the diet is extremely rare; most people get more than the two mg daily they need for optimal functioning. In addition, if you drink well or even tap water, manganese is concentrated in most water sources and can add to your total daily intake of the mineral.

Manganese is important for the body though it is used in the production of manganese superoxide dismutase a principal mitochondrial antioxidant. Manganese is important for proper metabolism, bone development, and wound healing.

Manganese in large doses though is a neurotoxin. Manganese poisoning causes many neurologic and physical problems that resemble diseases including Parkinson's disease and schizophrenia. A study from Greece concluded that people who ingested water with natural manganese levels as low as 2.3 mg a liter would show neurological symptoms. Another study showed that children who ingested rich natural manganese water experienced cognitive and behavioral deficits. The EPA even limits manganese concentrations in drinking water to 0.05 mg/ liter.

Toxicity from inhaling manganese dust (known as manganism) can be an occupational hazard, and cause a more rapid onset of neurological symptoms including tremors, irritability, aggressiveness, hallucinations difficulty walking, and facial muscle spasms.

My recommended daily supplementation limit of manganese is one mg, and I caution that no more than two mg be supplemented daily.

## **Magnesium**

**Upper Tolerable Limit Supplementation** – 600mg per fifty pounds of body weight daily

Hypermagnesemia is a rare condition in which a person has too much magnesium in their blood plasma. Hypermagnesemia usually does not occur in people that take supplemental magnesium, but it can occur if a person has impaired kidney function. IV magnesium bypasses the body's digestion entropy and has a greater chance of leading to overdose. In vivo, the body has many mechanisms in place to prevent an overdose from supplemental magnesium.

Diagnostic symptoms are usually a combination of low blood sugar and high calcium. Symptoms usually include weakness, vomiting, impaired breathing,

hypotension, increased blood calcium levels, arrhythmia, lack of muscle reflexes, and bradycardia (slow heart rate). It is possible that if one's plasma magnesium level is too high, the heart could stop, causing a "heart attack." This is because magnesium is a muscle relaxant, but this outcome is extremely rare.

Treatment for hypermagnesemia includes giving IV calcium gluconate to inactivate free magnesium through a binding process. The calcium also reactivates the muscle cells because calcium is a muscle stimulator. Finally, dialysis might be needed in some cases to eliminate excess magnesium, and to help with kidney function.

## **Selenium**

**Upper Tolerable Limit (Supplementation + Dietary) – 400 mcg daily**

**Recommended Daily Supplementation Limit – 400 mcg daily**

Proper selenium intake is very important for overall health. Selenium is important for glutathione peroxidase production, proper production of thyroid hormones, iodine absorption, many different selenoproteins production, and proper testosterone function.

Selenosis is a common hypermineralosis condition where the body contains excessive amounts of selenium. Selenosis has been reported from both the supplementation of selenium and dietary sources. Selenosis can stem from ingesting fruits and vegetables grown in soil high in selenium, ingesting water that is high in selenium mineral content, and overeating selenium rich foods including Brazil nuts. Brazil nuts are very high in selenium, and even one ounce of Brazil nuts can contain 544 mcg of selenium that is well over your upper tolerable daily limit. Selenium toxicity has also been reported in thirteen individuals after taking supplements that contained large amounts of selenium during a manufacturing error. Because of the real risk of selenosis, selenium should not be supplemented over 400 mcg daily, unless monitored by a doctor.

Symptoms of mild/moderate selenosis include nail brittleness, hair loss, gastrointestinal disturbances, skin rashes, garlic breath odor, fatigue, irritability, and nervous system issues.

Severe selenosis symptoms include liver failure, pulmonary edema, and coma.

Recommended forms of selenium for supplementation include Se-Methyl L-Selenocysteine and Selenomethionine.

## Zinc

**Upper Tolerable Limit (Supplementation + Dietary) – 100 mg daily**

**Recommended Daily Supplementation Limit – 60 mg**

Zinc toxicity usually is acute and comes from either occupational hazards (inhalation of zinc dust) or the long-term consumption of food and beverages out of non-lined galvanized zinc containers. Denture creams and children swallowing zinc pennies have also been known to cause zinc toxicity.

Symptoms of zinc toxicity include nausea, vomiting, abdominal pain, frequent colds, increased cholesterol levels, and chills. If zinc poisoning comes from inhalation, it can cause trouble breathing, sweating, and weakness.

High doses of supplemental zinc (greater than 100 mg of zinc daily for a few months) can create mild zinc toxicity symptoms, copper deficiency, and lower immune system functioning over time.

Do not supplement with more than sixty mg of elemental zinc daily. If you supplement with at least with thirty mg of zinc daily, I will that as long as you did not suffer from adrenal fatigue that you should supplement with two mg of Pure Encapsulations copper glycinate daily. Zinc and copper influence one another in the body and a good supplementation ratio are for every fifteen mg of zinc, one mg of copper is needed (15:1 ratio).

Zinc needs to be taken with food. If zinc is taken on an empty stomach, a gastrointestinal upset can occur. Zinc chloride is a powerful Lewis acid, free zinc ions rapidly bound with the HCL in the stomach to form zinc chloride, which greatly irritates the stomach lining.

# Chapter 8

## Omega 3 Supplementation

### Omega 3 General Information

Americans have more omega 6 fatty acids circulating their bloodstream than omega 3's. A fatty acid is a chain of lipids bound to a carboxy backbone. The chain is either saturated or unsaturated because of the types of bonds in the attached triglycerides. Omega 3's are considered to be polyunsaturated fats and contain at least two bonds. Your average American has an omega 6 to omega 3 ratio of at least 25:1.

Omega 6 intake is necessary for cell membrane integrity, inflammation, and pain responses, but an excess of omega 6 causes systemic inflammation. Omega 3 intake helps to curb excess inflammation in the body. The optimal ratio of omega 3 to omega 6 is debatable, but I believe a 1(omega 3):4(omega 6) ratio is fine for most people.

You can get healthy amounts of omega 3 from eating fish every other day (I recommend eating wild Icelandic cod, wild Atlantic flounder, wild Atlantic tuna, Atlantic non-Gulf shrimp, wild Atlantic oysters [also good source of zinc], wild Atlantic salmon, wild Atlantic calamari, Bar Harbor Wild Atlantic herring, and wild Atlantic sardines[Season is a good brand, certified parasite free]), It is always best to get Omega 3's from food sources over supplementation due to the possibility of the oxidation of the fatty acids in supplements. Bake seafood in the oven below 350 F to prevent oxidation of Omega 3 fatty acids. I do not recommend consuming raw seafood unless you deep freeze it and prepares it yourself due to increasing risk of parasite consumption. There are plant-based forms of omega 3, but they are made of longer chains of lipids. The octadecatrienoic acids from plants oxidize quickly and cause additional inflammation. The omega 3's that are most beneficial to one's health are long-chained fatty acids like EPA and DHA, which are found in seafood, fish oil, krill oil, and if you use supplemental form preferably calamari oil.

## **Main Types of Omega Three Fatty Acids:**

### **Alpha-Linolenic Acid**

ALA is a plant-based long chain omega 3 fatty acid. ALA is a carboxylic acid with an 18-carbon chain and three bonds. ALA is an essential fatty acid for the human body, and its intake must be made through the diet. ALA can be synthesized into the other omega 3 fatty acids EPA and DHA for further use by the body, but sadly, most of it is oxidized in the process. Studies have shown that the body is only able to synthesize less than 5% of total ALA into EPA and DHA. The best intake source of ALA in the diet is through the ingestion of chia seeds.

### **Docosahexaenoic Acid**

DHA is an animal / algae-based long chain omega 3 fatty acid. DHA is a carboxylic acid with a 22-carbon chain and two bonds. DHA is a big component of the make-up of our brain, skin, testicles, and retina. DHA is also the most abundant omega-3 fatty acid that is found in the brain. DHA supplementation is very important for improving cognitive function and brain health. The body can poorly synthesize DHA from ALA, but it is best to obtain it from the diet either by eating fish or by supplementing it.

### **Eicosapentaenoic Acid**

EPA is an animal based long chain omega 3 fatty acid. EPA is a carboxylic acid with a 20-carbon chain and two bonds. EPA has been studied for its ability greatly to lower inflammation in the body by the proper formation and use of prostaglandins. EPA also seems to have greater cardiovascular benefits associated with its supplementation than DHA. The body can also poorly synthesize EPA from ALA, but it is best to obtain it from the diet either by eating fish or by supplementing it.

## **Supplementation of omega 3 fatty acids or proper intake in the diet is important for:**

- Optimal brain health and function – reduces the risk of Alzheimer’s disease and dementia, clinically supplementation has been shown to help with depression
- Optimal heart function – reduces risk of heart attacks, arrhythmia, or the chances of sudden cardiac death
- Proper inflammation regulation in the body
- Optimal vision
- Optimal nervous system function
- Proper fetal development if pregnant
- Lowering the chance of developing diabetes, and helps promote proper blood sugar relation if you are diabetic
- Reducing asthmatic symptoms
- Reducing cholesterol and triglycerides in the blood.

The average person should supplement or obtain through their diet at least 500 mg of EPA and DHA daily. More can be supplemented if needed for overall improvement of health. For the optimal intake of omega 3 it all depends on your omega 6 to omega 3 ratios. If you were following a 4:1 ratio than ten grams of omega 6 accumulated in the diet throughout the day would require 2.5 grams of omega 3 daily intake. Stick to the 4:1 ratio of omega 3 diet and supplementation for optimal health.

## **Algal Oil**

### **Pros**

Algal DHA-rich oil is produced from certain types of algae. Algal oil was developed by NASA-sponsored research in the 80’s to find a plant-based food source that can be grown and used in space. It was later discovered that oil

extracted from the algae was rich in DHA. DHA or docosahexaenoic acid is a big component of the makeup of our brain, skin, testicles, and retinas.

In addition, DHA is the most abundant omega-3 fatty acid in our brain. DHA supplementation is very important for improving cognitive function and brain health.

It appears that the quality of DHA found in algal oil is comparable to the quality of the DHA found in fish oil.

Algal oil is a good way for people allergic to seafood, vegetarians, and vegans to get in proper amounts of DHA. Algal oil is also more sustainable to the environment than fish and seafood based omega 3 oils. Finally, the DHA amount of algal oil is comparable to most mid-grade fish oil supplements.

## **Cons**

Algal oil is equivalent in most cases to DHA concentrated fish oil but is extremely expensive in comparison.

The main problem with algae-based DHA (including some DHA fish-based supplements) is the use of hexane and other chemicals to extract the DHA, which leads to a poorer quality DHA supplement. Some algal oil supplements on the market use CO<sub>2</sub> extraction instead of hexane that lead to a better quality supplement.

Very few algal oil supplements contain algae-based EPA. EPA or eicosapentaenoic acid has been studied for its ability greatly to lower inflammation in the body by the proper formation and use of prostaglandins. EPA also seems to have greater cardiovascular benefits associated with its supplementation than DHA. One good brand of algal oil that contains a good amount of EPA is Nordic Naturals Algae Omega.

## **Final Verdict**

*If you are concerned about radiation in the Pacific Ocean from the Fukushima Daiichi nuclear disaster contaminating your algal oil, then to my knowledge I*

*cannot recommend any algal oil at this time. I suggest you look further into the disaster and how it is affecting the Pacific Ocean and the West Coast of the United States.*

Ultimately, I can only recommend the use of algal oil based omega 3 supplements if you are allergic to seafood or are vegetarian/vegan. For everyone else, I recommend you get your omega 3 supplementation from seafood consumption or fish/krill oil supplementation.

If you choose to supplement with algal oil, I recommend you use [Minami VeganDHA](#) or [Nordic Naturals Algae Omega](#).

## **Calamari Oil**

I cannot recommend the use of calamari oil yet for omega 3 supplementation, but some general info about the oil does make it look promising. There are no studies currently on calamari oil, but it might be a rich source of DHA. If you want to read more about the oil, you can read about from its manufactures [Calamarine](#). I would take any info a manufacturer gives you with a grain of salt; also, the manufacturing of the oil comes from squid by-products, and it is unknown if they use hexane.

## **Fish Oil**

Fish Oil is high in omega 3 fatty acids which most Americans are deficient. Fish oil is a good source of both EPA and DHA. Some oils are higher in either EPA or DHA, depending on the fish source used to produce the supplement.

One of the most important things one can do for their health is to take a high-quality fish oil supplement. You do not want to take a cheap or poor quality fish oil supplement because the oil is rancid and can do more harm than good. Here are some ways you can determine if your fish oil supplement is one of good quality (it should at least meet three of the following criteria):

- The omega 3 content of the supplement is at least 80% or greater of the total oil. Out of 2,000 mg of fish oil, at least 1,600 mg of it should be omega 3's.
- The fish oil is certified free of toxins including mercury.
- The fish oil is molecularly distilled.
- The fish oil is considered pharmaceutical grade.
- The fish oil is CO2 supercritical extracted instead of using harsh solvents like hexane.
- The fish oil comes from a reputable company listed in chapter one (should be at least medium tier).
- The fish oil uses triglyceride-bounded oils instead of lesser quality ethyl ester bounded oils.

*If you are concerned about radiation in the Pacific Ocean from the Fukushima Daiichi nuclear disaster contaminating your fish oil, then to my knowledge the only fish oil I can recommend to you is Norwegian cod liver oil. Disregard any of the following information and stick with either [Carlson's liquid cod liver oil](#) or [Nordic Naturals cod liver oil](#) if the radiation concerns you. The use of virgin cod liver oil like [NutraPro virgin cod liver oil](#), [Sonne's](#), or [Rosita](#) is also a great idea as long as you have your vitamin A levels monitored during supplementation. I suggest you look further into the disaster and how it is affecting the Pacific Ocean and the West coast of the United States.*

The best fish oil supplement I can recommend that meet all the above criteria is [Nordic Naturals Ultimate Omega 2x](#).

Other fish oil supplements that I can recommend including, [Carlson's liquid fish oil](#), [UnoCardio](#), and [Now Omega-3 fish oil](#).

The amount of fish oil supplemented might need to be limited in people taking blood thinners and people with chronic heart failure. Large intake of omega 3's may change the viscosity of blood and interfere with blood thinners. People with

chronic heart failure need normal amounts of omega 3, but too much can cause some issues with proper heart rate homeostasis.

## **Krill Oil**

In the future, krill oil omega 3 supplements might be considered the best for optimal health. There are not enough published studies currently to recommend it over fish oil for omega 3 supplementation.

Fatty acids in krill oil are bonded to phospholipids instead of triglycerides or ethyl esters like fish oil. The cell membranes in our body are made from phospholipids so in theory krill oil is better assimilated into the cells than fish oil. Triglycerides are not easily assimilated into cellular membranes and have to be broken down first and run through the kinase pathway. There is also proposed better absorption of DHA and delivery to the brain with krill supplementation. Krill oil also naturally contains the potent antioxidant, astaxanthin, which may prevent oxidation of omega 3 oils in the supplement and contain additional health benefits as well. All of these reasons are why it is believed that krill oil supplementation is superior to fish oil.

I do recommend that if you have arthritis, you supplement with krill oil, based on both recent studies and astaxanthin.

Do not supplement krill oil if you are allergic to shellfish; it may cause an allergic reaction. If you are allergic to krill oil, Jarrow offers a fish oil supplement made from a sand eel that is bonded to phospholipids called [PhosphOmega](#).

I recommend that any krill oil that you use is Neptune Brand Krill Oil; it seems to be the best. NKO is extracted from Antarctic krill and is tested free of heavy metals and contaminants. It is produced in a GMP certified plant in Canada. See if your favorite brand out of the recommended brands in chapter one uses NKO in their krill oil supplements.

## **Plant-Based ALA**

I do not recommend supplementation of plant-based ALA from the diet or in supplemental form. ALA conversion to other omega 3 fatty acids is so poor it is not worth it in most cases. I recommend algal oil for vegans and vegetarians over plant-based ALA.

If you choose only to intake plant-based ALA chia seeds are the superior current source. Soak your chia seeds for at least ten minutes in water to let them gel before eating them to help with assimilation. Try to get organic chia seeds if possible. Flax is a decent source but not as good as chia. Perilla seeds also might be a better source of ALA than flax. Hemp is a good source of ALA but also contains a lot of omega 6.

## Chapter 9

# Optimal Daily Supplementation on a Small Budget

Not everyone has a lot of money to supplement with a million different supplements every day. This who this chapter is for, optimal supplementation for as little money possible. Of course, the recommendations in this chapter might need to be tailored to individual needs. Always check with your medical professional before starting any supplementation program.

### \$20 Monthly Budget

[Klaire Labs VitaSpectrum capsules](#) – Two capsules daily - \$30 upfront cost – one bottle will last you three months, one month cost = \$10

[Now Omega-3 fish oil](#) – One teaspoon daily - \$24 upfront cost – one bottle will last you 100 days, one-month cost = \$8

[Source Naturals magnesium malate](#) – One capsule daily - \$9 upfront cost – one bottle will last you four months, one-month cost = \$2

Total Upfront Cost: \$63

### Daily Supplementation Schedule

#### Breakfast

One VitaSpectrum capsule

One capsule Source Naturals Magnesium malate

## **Dinner**

One VitaSpectrum capsule

One teaspoon NOW fish oil

## **\$30 Monthly Budget**

[Klaire Labs VitaSpectrum Capsules](#) – Two capsules daily - \$30 upfront cost – one bottle will last you three months, one month cost = \$10

[Now Omega-3 Fish Oil](#) – One teaspoon daily - \$24 upfront cost – one bottle will last you 100 days, one-month cost = \$8

[Source Naturals magnesium malate](#) – Two capsules daily - \$10 upfront cost – one bottle will last you two months, one-month cost = \$4

[Life Extension Super K](#) – One soft gel daily - \$20 upfront cost – one bottle will last you three months, one-month cost = \$7

Total Upfront Cost: \$92

## **Daily Supplementation Schedule**

### **Breakfast**

One VitaSpectrum capsule

Two capsules Source Naturals magnesium malate

One Life Extension Super K capsule

## **Dinner**

One VitaSpectrum capsule

One teaspoon NOW fish oil

## **\$40 Monthly Budget**

[Thorne Basic Nutrients 3](#) – Two capsules daily - \$41 upfront cost – one bottle will last you three months, one month cost = \$14

[Now Omega-3 Fish Oil](#) – Two teaspoons daily - \$24 upfront cost – one bottle will last you 50 days, one month cost = \$13

[Source Naturals magnesium malate](#) – Two capsules daily - \$9 upfront cost – one bottle will last you two months, one-month cost = \$4

[Life Extension Super K](#) – One soft gel daily - \$20 upfront cost – one bottle will last you three months, one-month cost = \$7

[Detoxadine](#) – Three drops daily - \$29 upfront cost – one bottle will last you 200 days, one-month cost = \$4

Total Upfront Cost: \$123

## **Daily Supplementation Schedule**

### **Breakfast**

One VitaSpectrum capsule

Two capsules Source Naturals magnesium malate

One Life Extension Super K capsule

## **Before Lunch**

Three drops of Detoxadine under tongue

## **Dinner**

One VitaSpectrum capsule

One teaspoon NOW fish oil

## **\$50 Monthly Budget**

[Thorne Basic Nutrients 3](#) – Two capsules daily - \$41 upfront cost – one bottle will last you three months, one month cost = \$14

[Now Omega-3 fish oil](#) – One teaspoon daily - \$24 upfront cost – one bottle will last you 100 days, one-month cost = \$8

[Source Naturals magnesium malate](#) – Two capsules daily - \$9 upfront cost – one bottle will last you two months, one-month cost = \$4

[Life Extension Super K](#) – One soft gel daily - \$20 upfront cost – one bottle will last you three months, one-month cost = \$7

[Detoxadine](#) – Three drops daily - \$29 upfront cost – one bottle will last you 200 days, one-month cost = \$4

[Jarrow Ubiquinol 100 mg](#) – One soft gel every day - \$32 upfront cost, one bottle will last your four months, one-month cost = \$8

[Acerola Vitamin C](#) – 1/2 tsp. mixed with filtered water once daily - \$15 upfront cost,

one pouch will last you one month, one-month cost = \$7

Total Upfront Cost: \$170

## **Daily Supplementation Schedule**

### **Breakfast**

One Thorne Basic Nutrients 3 capsule

Two capsules Source Naturals magnesium malate

One Life Extension Super K capsule

One Jarrow Ubiquinol soft gel

One-half tsp. acerola vitamin C mixed in filtered water

### **Before Lunch**

Three drops of Detoxadine under tongue

### **Dinner**

One Thorne Basic Nutrients V capsule

One teaspoon NOW fish oil

## **\$70 Monthly Budget**

[Thorne Basic Nutrients 3](#) – Two capsules daily - \$41 upfront cost – one bottle will last you three months, one month cost = \$14

[Now Omega-3 Fish Oil](#) – One teaspoon daily - \$24 upfront cost – one bottle will last you 100 days, one-month cost = \$8

[DOH Magnesium Glycinate](#) – Three capsules daily - \$24 upfront cost – one bottle will last you 45 days, one month cost = \$16

[Life Extension Super K](#) – One soft gel daily - \$20 upfront cost – one bottle will last you three months, one-month cost = \$7

[Detoxadine](#) – Three drops daily - \$29 upfront cost – one bottle will last you 200 days, one-month cost = \$4

[Jarrow Ubiquinol 100 mg](#) – One soft gel every day - \$32 upfront cost, one bottle will last your four months, one-month cost = \$8

[Acerola Vitamin C](#) – 1 tsp. mixed with filtered water once daily - \$15 upfront cost, one pouch will last you one month, one month cost = \$14

Total Upfront Cost: \$175

## **Daily Supplementation Schedule**

### **Breakfast**

One Thorne Basic Nutrients 3 capsule

One Life Extension Super K capsule

One Jarrow ubiquinol soft gel

One tsp. acerola vitamin C mixed in filtered water

### **Before Lunch**

Three drops of Detoxadine under tongue

### **Dinner**

One Thorne Basic Nutrients V capsule

One teaspoon NOW fish oil

**Bedtime**

Three DOH magnesium glycinate capsules

# Chapter 10

## Supplement Regimen Recommendations

Chapter ten consists of optimal supplement regimen recommendations for certain medical conditions for optimal supplementation. Granted some supplement recommendations need to be tailored to certain people and medical conditions. Always ask a medical professional before starting any supplement regimen. Some supplements interact with certain medications and other supplements, so if you are taking medications ask your medical professional if any supplement is safe to take in conjunction with them.

### Arthritis Protocol

#### Breakfast

- One [Thorne Basic Nutrients 3](#) capsule
- One [Life Extension Super K](#) capsule
- One [Jarrow Ubiquinol w PQQ](#) soft gel
- One tsp. [Acerola vitamin C](#)
- Two [Life Extension Bio-Curcumin](#) capsules
- Two [Now Neptune krill oil](#) soft gels
- One [Life Extension Bio-curcumin](#) capsules

#### Before Lunch

Three drops of [Detoxadine](#) under tongue

### **Dinner**

One [Thorne Basic Nutrients 3](#) capsule

One [Now Neptune krill oil](#) soft gel

One [Jarrow Biocell type 2 collagen](#) capsule

Two [Pure Encapsulations boswellia](#) capsules

### **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

### **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

## **Asthma Protocol**

### **Breakfast**

One [Thorne Basic Nutrients 3](#) capsule

One [Life Extension Super Ubiquinol](#) soft gel

One tsp. [Acerola vitamin C](#)

Two teaspoons [Carlson's liquid cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

Two [Now Quercetin](#) capsules (do not use if you have a [COMT](#) mutation)

### **Before Lunch**

Three drops of [Detoxadine](#) under tongue

### **Dinner**

One [Thorne Basic Nutrients 3](#) capsule

One teaspoon [Carlson's liquid cod liver oil](#)

### **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

### **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

## **Diabetes Protocol**

### **Breakfast**

One [Thorne Basic Nutrients 3](#) capsule

One [Life Extension Super Ubiquinol](#) soft gel  
One tsp. [Acerola vitamin C](#)  
One teaspoon [Carlson's liquid cod liver oil](#)  
One [Life Extension low dose vitamin K2](#) soft gel  
One [Jarrow Formulas R-lipoic acid](#) capsule  
One [Life Extension mega benfotiamine](#) capsule  
One [Jarrow ALCAR](#) capsule

### **Before Lunch**

Three drops of [Detoxadine](#) under tongue

### **Dinner**

One [Thorne Basic Nutrients 3](#) capsule  
One teaspoon [Carlson's liquid cod liver oil](#)  
One [Jarrow Formulas R-lipoic acid](#) capsule

### **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight daily.

### **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

# **Detox Protocol (Modified Jason Hooper Protocol, Thanks to Him for the Original Protocol, Use With Caution if You Have Elevated Mercury or Amalgams)**

**Daily Detox Protocol Schedule – Perform this protocol only once a month.**

6am: Take [Upgraded Glutathione Force](#) with salt water (one teaspoon of salt in warm water)

7am: Drink [BPC](#)

11am: Take five grams of [Upgraded Coconut Charcoal](#)

2pm: Drink [Bulletproof tea](#), mix in one tablespoon of [Spirulina Manna](#)

5pm: Take five grams of [Upgraded Coconut Charcoal](#)

8pm: Drink [Bulletproof tea](#), mix in one tablespoon of [Spirulina Manna](#), take two [Jarrow milk thistle](#) capsules, one [Jarrow NAC](#) tablet

11pm: Take five grams of [Upgraded Coconut Charcoal](#)

## **Chronic Fatigue Protocol**

### **Breakfast**

One Thorne FX AM packet

One [Life Extension Super Ubiquinol](#) soft gel

One teaspoon [Carlson's liquid cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

One scoop of [Doctor's Best D-ribose](#)

One [Source Naturals NADH](#) sublingual

One [Adeno B12](#) sublingual

[Designs for Health magnesium malate](#) - optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight daily.

### **Before Lunch**

Three drops of [Detoxadine](#) under tongue

One [Source Naturals NADH](#) sublingual

### **Dinner**

One Thorne FX PM packet

One teaspoon [Carlson's liquid cod liver oil](#)

## **Heart Disease**

### **Breakfast**

One Thorne FX AM packet

Two [Life Extension Super Ubiquinol](#) soft gels

Two teaspoons [Carlson's liquid cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

One [Life Extension Bio-curcumin](#) capsules

## **Before Lunch**

Three drops of [Detoxadine](#) under tongue

## **Dinner**

One Thorne FX PM packet

Two teaspoons [Carlson's liquid cod liver oil](#)

## **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

## **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

Look into [Pauling Therapy](#).

# **Hepatitis C**

## **Upon Waking**

[Upgraded Glutathione Force](#) (use with caution if you have a mercury burden or amalgams).

## **Breakfast**

One Thorne FX AM packet

One [Life Extension Super Ubiquinol](#) soft gel

One teaspoon [Carlson's liquid cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

One [Jarrow Formulas R-lipoic acid](#) capsule

Two [Jarrow milk thistle](#) capsules

One [Life Extension apolactoferrin](#) capsule

One [Jarrow NAC Sustain](#) tablet (use with caution if you have a mercury burden or amalgams).

## **Before Lunch**

Three drops of [Detoxadine](#) under tongue

## **Dinner**

One Thorne FX PM packet

One teaspoon [Carlson's liquid cod liver oil](#)

One [Jarrow Formulas R-lipoic acid](#) capsule

Two [Jarrow milk thistle](#) capsules

One [Life Extension apolactoferrin](#) capsule

## **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

**Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

## **Inflammatory Diseases**

**Breakfast**

One [Thorne Basic Nutrients 3](#) capsule

One [Life Extension Super K](#) capsule

One [Jarrow Formulas vitamin D3](#) 5,000 IU soft gel

One [Jarrow Ubiquinol w PQQ](#) soft gel

Two 1,000 mg capsules Ester-C

Two [Life Extension Bio-Curcumin](#) capsules

Two teaspoons [Carlson's liquid cod liver oil](#)

**Before Lunch**

Three drops of [Detoxadine](#) under tongue

**Dinner**

One [Thorne Basic Nutrients 3](#) capsule

One teaspoon [Carlson's liquid cod liver oil](#)

One capsule [Pure Encapsulations copper glycinate](#) every other day

Two [Pure Encapsulations boswellia](#) capsules

## **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

## **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

# **Migraines**

## **Breakfast**

One Thorne FX AM packet

One [Life Extension Super Ubiquinol](#) soft gel

One teaspoon [Carlson's liquid cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

One [Biotech Pharmacal vitamin B2](#) capsule

One [Life Extension Bio-Curcumin](#) capsules

## **Before Lunch**

Three drops of [Detoxadine](#) under tongue

## **Dinner**

One Thorne FX PM packet

One teaspoon [Carlson's liquid cod liver oil](#)

## **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

## **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

## **Nerve Issues / Pain (Not Diabetic Related)**

*If it is legal in your state, I recommend the use of: [Rick Simpson Oil](#) or [Kratom](#)*

## **Breakfast**

One Thorne FX AM packet

One [Life Extension Super Ubiquinol](#) soft gel

One teaspoon [Carlson's liquid cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

One [Jarrow Formulas R-lipoic acid](#) capsule

One [Life Extension Bio-Curcumin](#) capsules

### **Before Lunch**

Three drops of [Detoxadine](#) under tongue

One [Thorne Pyridoxal 5'-Phosphate](#) capsule

### **Dinner**

One Thorne FX PM packet

One teaspoon [Carlson's liquid cod liver oil](#)

One [Jarrow Formulas R-lipoic acid](#) capsule

### **Bedtime**

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

### **Advice:**

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

## Optimal Daily Supplement Stack

### Breakfast

One Thorne FX AM packet

One [Life Extension Super Ubiquinol](#) soft gel

One teaspoon [Nutrapro virgin cod liver oil](#)

One [Life Extension low dose vitamin K2](#) soft gel

One tsp. [Acerola vitamin C](#)

### Before Lunch

Three drops of [Detoxadine](#) under tongue

### Dinner

One Thorne FX PM packet

One teaspoon [Nutrapro virgin cod liver oil](#)

### Bedtime

[Pure Encapsulations magnesium glycinate](#) – optimal magnesium supplementation should be equal to 200 mg per 50 pounds of body weight.

### Advice:

Follow vitamin D protocol in chapter six.

Follow the [Perfect Health Diet](#).

# Chapter 11

## Traveling with Supplements

There are many different ways people take supplements while they are on the road. Some people throw all of their supplement bottles into their luggage. The main problem with using this method is that either some of the bottles become open during transportation and spill your supplements everywhere or you take your supplements less because you hate dragging out all the bottles. Some people only carry with them the supplements they need the most.

**Here are some general recommendations when it comes to traveling:**

- Every country has different regulations when it comes to the importation of supplements, even for travel. Look up the importation status of your supplements before you travel to another country and see if it is legal to use/carry in that country. Kava, for example, is restricted, in Australia; you cannot bring in more than two kilograms for personal use. Check the customs website of the individual country you are traveling to for more information.
- If you are flying, I recommend not bringing or storing any liquid supplements. Liquid supplements could be banned or disposed of because of airport security regulations, and they can spill everywhere in your luggage and make a huge mess.
- I recommend not packing all your supplement bottles in your luggage. I recommend instead packing all your supplements into individual daily small plastic baggies. Some weekly pill storage cases might work as well, but your supplements can spill out easier in the luggage than if they are in tied small daily plastic bags. In addition, you are more likely to leave a large pill storage case in your hotel room and not take your supplements. If you are worried that your luggage might be searched, and all of those baggies look suspicious, put them all in a container and label the container vitamins, you should be fine.

- If you decide to bring a powdered supplement with you, I suggest you bring it in a vacuumed sealed stainless steel container. Your powder is less likely to spill everywhere if it is put in a stronger sealed container. Just remember to keep the lid sealed tightly when storing it in your luggage. Label the supplement contents of the container as well.
- Only bringing one optimal supplement with you is a great idea: I recommend [Life Extension Mix Powder](#). I would transfer the supplement into a vacuumed sealed stainless steel container and tape the label on it.
- To help prevent/combat jet lag take two mg of slow release melatonin around 10 p.m. for a few days.
- U.S. customs Information for traveling with supplements:

“Non-prescription medicines (also known as over-the-counter or OTC medicines), vitamins, herbs, and supplement products fall under the jurisdiction of the Food and Drug Administration (FDA). In general, the FDA will not object to the personal importation of those products, as long as:

- The traveler is carrying the products in their possession (or in their luggage);

- The amount being carried is an amount reasonably considered for personal use.”

# Chapter 12

## Medicine Cabinet Supplement Guide

Most people keep an array of medications in their medicine cabinet to treat any ailment that may arise in their daily life. Even I have some medications in my medicine cabinet (Tylenol, aspirin, magnesium hydroxide, unexpired antibiotics, and saline) just in case I ever need to use them. However, I also have many supplements in my medicine cabinet as well to help with certain medical issues. I believe a fully integrated medicine cabinet with both supplements and medications can help anyone.

### Constipation

#### Magnesium Peroxide

Uses: Relief of constipation.

Brands: [Aerobic Life Mag-07](#)

Side effects: Extremely loose stools if taken at high doses.

RARE: hypersensitive allergic reaction

Saline laxatives attract and retain water in the intestines and increase the intestinal intraluminal pressure that softens the stool and produces peristaltic activity. Saline laxatives also increase the release of CCK, which stimulates the digestion of fat and protein in the small intestine.

Magnesium that is not absorbed from food intake or a supplementation becomes a saline laxative in the intestines. Poorer absorbed forms of magnesium that loosen

stools are oxide, hydroxide, peroxide, and citrate. Most of the time large amounts of magnesium citrate, two grams of elemental magnesium, are taken in oral form to clean out the bowels.

I recommend using magnesium peroxide as the best form of magnesium as a colon cleanser. The peroxide will help form oxygen reactions in the colon that will help clean out the old digestive matter in the colon if any exist as well as push out the constipated matter easier.

If you are constipated, I recommend starting with one gram of magnesium peroxide mixed well in a 16 oz. glass of filtered water. If the magnesium does not produce a bowel movement in a few hours, you can take another gram of magnesium peroxide if needed.

## **Diarrhea**

### **Activated Charcoal**

Uses: Diarrhea, reducing herx reactions, removal of toxins.

**Brand:** [Upgraded™ Activated Charcoal](#)

Side effects: RARE: systemic allergic reaction, constipation

Activated charcoal comes from burning a carbon source that yields a blackish porous material. There are many different grades of activated charcoal that differ in their absorption, Fix Your Gut, however, is going to focus on standard food grade or medical grade activated charcoal.

Activated charcoal is more than just for “detoxing” it serves a medical purpose. There is medical grade activated charcoal that is used for accidental oral overdose and poisoning (depending on the substance) in hospitals across the world.

Activated charcoal only binds to larger molecules, non-polar molecules, or molecules that have a negative charge since activated charcoal itself has a slight positive charge. Some things that activated charcoal cannot bind to include:

- Alcohol (activated charcoal, however, can bind to some impurities found in alcohol)
- Glycols
- Strong acids or bases
- Some heavy metals like lithium and iron.

We are lucky, though; activated charcoal can bind to endotoxins produced in the gut when ingested. Binding of endotoxins in our digestive tract reduces inflammation, improves liver/kidney function, and helps reduce symptoms of a Herxheimer reaction.

Activated charcoal can also absorb excess gas as well produced by overgrowth that might reduce bloating and abdominal pain.

Finally, it can bind with some of the toxins in the food we ingest including mycotoxins.

## **How Much Activated Charcoal Should Be Supplemented and Drawbacks of Activated Charcoal Supplementation**

It depends on the severity of your Herxheimer reaction.

I suggest one to two activated charcoal capsules an hour after taking your antimicrobial supplements so that it does not interfere with their use if you are having a Herxheimer reaction.

In addition, I suggest one to two capsules if you are having strong reactions to food as well if you have overgrowth even if the food does not come from a questionable source.

Do not be surprised if your stool darkens when ingesting activated charcoal, this is normal.

There are drawbacks to supplementing with activated charcoal, though. Activated charcoal can interfere with your intake from food, medications, or supplements. I would take it a few hours away from supplements, medications, and meals if possible.

If you take too much, there is also a possibility that it can cause gastrointestinal blockages, but most of the time this is only seen in medical emergencies where too much might be accidentally given to try to help someone who overdosed. If you have severe abdominal pains from ingesting normal amounts of activated charcoal, you might want to notify your doctor or go to the emergency room because you might have an intestinal blockage.

## **Peppermint Oil**

Uses: Relief of constipation and intestinal spasms.

Side effects: acid reflux from relaxation of LES (Enteric Coated Peppermint Oil should be used in those with acid reflux), diarrhea (usually for a few days at first, but will taper off later)

RARE: hypersensitive allergic reaction

Peppermint is a hybrid mint plant. It is a cross between watermint and spearmint. Peppermint is native to Europe, but the herb has now grown widespread throughout the world. People everywhere value peppermint for its strong cooling scent, its cooling sensation on the skin, and its flavoring capabilities in baking, candy making, and drink preparation.

Peppermint has a long tradition of herbal use and is used by the Egyptians, Greeks, and the Europeans for medicinal purposes. Peppermint has been studied intensively for its use in reducing the symptoms of IBS and other intestinal disorders. Peppermint is known to have high natural menthol content, contributing to its use throughout history to soothe sore throats. Menthol vapors that are produced from peppermint oil can be inhaled to relax bronchial passages and relieve congestion.

## **On the Importance of Menthol**

Menthol is an organic compound that can be obtained from peppermint oil. Menthol has quite a few known medicinal properties, including:

- Pain relief - Menthol weakly activates the  $\mu$ -opioid receptors, which can be beneficial for pain relief. Different substances can activate the Kappa-opioid receptors in the brain. When the receptors are activated by these different substances (including menthol), they change both the perception of pain by the brain and reduce inflammatory pain nerve signaling pathways in the body, therefore, increasing the pain threshold.
- Muscle relaxant - Menthol's mechanism of action as a muscle relaxant is by blocking voltage-sensitive sodium channels in the neuromuscular junction. This blockage reduces neural activity in the muscles, which in turn relaxes the muscles and reduces muscle spasms.
- Vasodilatation - Menthol is a known vasodilator when it is applied to the skin. It increases blood flow to capillaries in the skin by dilating veins that are close to the dermis, or the top layer of the skin.
- Activating TRPM8 receptors - Menthol can chemically activate the TRPM8 receptors in the skin. These receptors are responsible for the cooling sensation that menthol is known for when menthol is inhaled, eaten, or applied topically to the skin. Activating the TRPM8 receptors has also been theorized to be a potential protocol for eliminating prostate cancer. Finally, TRPM8 receptors that are activated in the intestinal tract correctly modulate inflammatory responses and can help to correct an overactive immune system in people suffering from inflammatory bowel diseases.
- Relieving congestion and pain from sore throats - Menthol has been used for centuries to help relieve bronchial/nasal congestion and sore throat pain by reducing inflammation and relaxing nasal, bronchial, and throat passageways.

## **Uses of Peppermint Oil for Digestive Purposes**

- Peppermint oil has strong antibacterial properties.

- Relaxes the lower esophageal sphincter (LES), which can be beneficial in people suffering from achalasia. It can worsen heartburn symptoms in people with GERD by relaxing the LES. People with GERD should only use enteric-coated peppermint oil.
- Peppermint oil reduces spasms of the intestines.
- Peppermint oil can help relieve constipation.
- Peppermint oil may help relieve abdominal pain.
- Peppermint oil is used to help relieve the symptoms of IBS and SIBO.
- Topical peppermint oil cream can be used to help reduce hemorrhoids.

## **Enteric-Coated Peppermint Oil: Magic Bullet for Intestinal Issues?**

Enteric-coated peppermint oil (ECPO) is extremely versatile in the relieving of intestinal issues. ECPO can be used in eliminating intestinal infections, SIBO, IBS, chronic functional abdominal pain (CFAP), inflammatory bowel diseases, and hemorrhoids. It even helps in the relief of chronic constipation.

In a 2007 study, 75% of the people in the study took enteric-coated peppermint oil for four weeks and had a major reduction of IBS symptoms. Some people even went into remission during the study (compared to the 38% that took a placebo). Another study using ECPO was conducted in Iran in 2009 and produced similar results. Results from the study concluded enteric-coated peppermint oil greatly reduced symptoms of IBS and can be theoretically used in relieving symptoms of chronic functional abdominal pain.

It has been theorized that ECPO is very effective in the treatment of both IBS and CFAP. The proposed mechanism of action is that the oil both reduce intestinal spasms and increase the pain threshold by activating  $\kappa$ -opioid and TRPM8 receptors. Peppermint oil eliminates opportunistic bacteria in the colon and small intestine that has been linked to one of the possible causes of IBS and the main cause of SIBO.

Supplementation of peppermint oil for a short period may produce loose stools and help relieve constipation. The mechanism of action for the loosening of stools may be that menthol is a mild irritant to the intestines and causes the intestines to draw in more water, causing it to act as an osmotic laxative to loosen stools. A reverse

reaction may occur in people who have IBS-D the peppermint oil may calm intestinal spasms and regulate bowel movements so that their diarrhea is instead relieved.

Lastly, peppermint oil has even been used as an ingredient in a few natural hemorrhoid creams to help both reduce and alleviate pain that is caused by hemorrhoids. The peppermint oil in the cream acts as a vasodilator to the hemorrhoid tissue and helps increase blood flow to the afflicted area. Increasing blood flow to the tissue promotes healing by reducing swelling and the size of the hemorrhoid. The peppermint oil would also activate the  $\kappa$ -opioid and TRPM8 receptors on the hemorrhoid tissue and would reduce pain.

### **Recommended Forms of Peppermint Oil**

- Recommended forms of enteric-coated peppermint oil (known non-phthalate coating): [Enzymatic therapy peppermint plus](#), [Colpermin peppermint oil capsules](#) (does contain peanut oil)
- Other recommendation (possible phthalate coating): [Pepogest peppermint oil](#)
- Liquid peppermint oil (use very little, follow bottle instructions): "[Country Gent](#)" [peppermint oil](#)
- Peppermint oil hemorrhoid cream: <http://www.alleviatehemorrhoids.com/>

## **Energy**

### **D-Ribose**

D-ribose is a 5-carbon sugar that is created naturally by our body.<sup>1</sup> Even though ribose is a sugar, it has been theorized that supplemental consumption does not raise blood sugar levels, as the body stores it in the mitochondria and muscle cells for future use. Ribose is used by the body to help produce ATP by stimulating a pathway for its production in mitochondria. If the mitochondria do not have

enough ribose to stimulate ATP production, then less energy is produced for the body to use. When less energy is produced in our mitochondria, we tend to have less energy and are more prone to muscle aches

Ribose is produced the most in and used most rapidly by the mitochondria of muscle cells than any other cells. This sugar is used to provide the ample ATP that our muscles need for exertion. Overexertion of muscles will deplete D-ribose and causes soreness for a period of time, but ribose will be replenished after a few days of rest. Extended periods of stress on the body can cause a chronic depletion of D-ribose in the body that cannot be rectified with supplementation. Some diseases and medical conditions can cause or be caused by a chronic depletion of ribose, including heart disease, heart failure, fibromyalgia, and chronic fatigue syndrome. There is a lot of research that ribose supplementation can greatly relieve the fatigue and muscle weakness associated with chronic fatigue syndrome.

There are few side effects known with ribose supplementation. Some people who supplement D-ribose may feel hyperactive, and over energized on the supplement (people with mania should avoid ribose supplementation if possible). If ribose makes you feel like you have too much energy, it may be best to lower your ribose dose or discontinue the supplement. It best to take ribose with meals throughout the morning and afternoon. Also, do not supplement with ribose before bedtime, because ribose increases energy production. Ribose might also cause a dip in blood sugar after supplementation, which is why it needs to be taken with food. Finally, if taken with warfarin, it might cause more bleeding, so use with caution.

## **Recommended Ribose Supplements**

**Best ribose supplement for the cost:** [Doctor's Best Best D-Ribose Powder](#)

**Best overall ribose supplement:** [Pure Encapsulations Ribose](#)

**Other ribose supplement recommendations:** [Jarrow Formulas D-Ribose Powder](#), [Douglas Labs Corvalen Ribose Powder](#)

## **L-carnitine**

L-carnitine is a derivative of the amino acid, lysine. L-carnitine can be synthesized in the body from the amino acids lysine and methionine. L-carnitine can also be

obtained through the diet. Some critically ill patients, people that take certain medications (valproic acid), and people born with carnitine synthesis disorders might need to supplement L-carnitine on a daily basis. The reason they need to supplement with L-carnitine is that they are vulnerable to an L-carnitine deficiency. L-carnitine also has an important relation to CoQ-10, because both are primarily concentrated in heart muscle, and both are also found in large numbers, in skeletal muscle. L-carnitine also plays an important role in energy production within the mitochondria. Carnitine conjugates fatty acids for transport into the mitochondria so that the fatty acids can then be metabolized for energy.

Long-chain fatty acids have first to become esters of L-carnitine before they can be used by the mitochondria. This conversion occurs so that the acids can enter the mitochondrial matrix and provide source material for the production of energy. L-carnitine serves in some different ways in increasing the capacity of the mitochondria by helping in the generation of ATP. Carnitine also works synergistically with coenzyme A to metabolize fatty acids and transport them within the individual cells.

## **Different Forms of L-carnitine**

There are six recognized forms of L-carnitine currently, and each form serves its unique purpose. The six forms of L-carnitine are:

**L-carnitine** – This is the standard L-carnitine. L-carnitine supplementation is used in the body to increase energy production, boost heart health, and also to increase fat metabolism in humans. L-carnitine should be used in people who are sensitive to acetyl L-carnitine, which the supplement can over-stimulate some people and cause racing thoughts. The daily recommended dose of L-carnitine for most people is 2,000 mg. I would not take more than 4,000 mg daily if possible because the excess L-carnitine might cause a fishy body odor and skin sensitivities at this large of a dose.

When you should take the supplement: To help facilitate weight loss L-carnitine should be taken on an empty stomach, for everyone else L-carnitine should be taken with your largest meal.

**Recommended Brands:** [Jarrow Formulas L-Carnitine](#), [Life Extension – L-Carnitine Powder](#)

**L-carnitine L-tartrate** – L-carnitine L-tartrate is a chelation of L-carnitine and tartaric acid. Tartaric acid is a natural acid found in grapes. Tartaric acid is supposed to help with the stability and absorption of the L-carnitine in the body. This form of L-carnitine has been shown in a study to decrease the recovery time for athletes after workouts. The daily recommended dose of L-carnitine L-tartrate for most people is 2,000 mg. I would not take more than 4,000 mg daily if possible because the excess L-carnitine L-tartrate might cause a fishy body odor and skin sensitivities at this large of a dose.

When you should take the supplement: To help facilitate weight loss L-carnitine L-tartrate should be taken on an empty stomach, for everyone else L-carnitine L-tartrate should be taken with your largest meal.

**Recommended Brand:** [Jarrow Formulas L-Carnitine Tartrate](#)

**L-carnitine fumarate** – L-carnitine fumarate is a chelation of l-carnitine and fumaric acid. Fumaric acid is an acid found in some mosses and mushrooms. Fumaric acid is also supposed to help with the stability and absorption of the L-carnitine. Fumarate can help activate the Nrf2 antioxidant response pathway, the primary cellular defense against cytotoxic effects of oxidative stress. L-carnitine chelated with fumarate might provide some mitochondrial defense, compared to the other forms of L-carnitine, which may perform no known defense. The daily-recommended dose of L-carnitine fumarate for most people is 2,000 mg. I would not take more than 4,000 mg daily if possible because the excess L-carnitine fumarate may create a fishy body odor and skin sensitivities at this large of a dose.

When you should take the supplement: To help facilitate weight loss L-carnitine fumarate should be taken on an empty stomach, for everyone else L-carnitine fumarate should be taken with your largest meal.

**Recommended Brands:** [Doctor's Best Best L-Carnitine Fumarate](#), [Pure Encapsulations L-Carnitine Fumarate](#)

**Acetyl L-Carnitine** – L-Carnitine often does not cross the blood-brain barrier very well on its own. Scientists discovered that by acetylating L-carnitine, carnitine was able to cross the blood-brain barrier more effectively. Acetyl-L-carnitine makes the transport of fatty acids to the brain easier by allowing the acids to cross the blood-brain barrier and nourish the brain easily. In addition, the acetyl part of the

chelation helps create more acetylcholine in the brain by donating an acetyl group. Acetyl-L-carnitine has been shown in studies to improve memory and brain function, especially in people who are suffering from type 2 diabetes. It has been theorized that this increase of brain function occurs because acetyl-L-carnitine nourishes the brain with essential fatty acids for optimal functioning. One of the only drawbacks that I know with acetyl-L-carnitine supplementation is that for some people it can stimulate the brain so much that they develop racing thoughts. If that happens, switch to a standard L-carnitine chelation and receive some of the benefits of supplementing with carnitine. The daily-recommended dose of acetyl-L-carnitine for most people is 2,000 mg. I would not take more than 4,000 mg daily if possible because the excess acetyl-L-carnitine might cause a fishy body odor and skin sensitivities at this large of a dose.

**When You Should Take the Supplement:** It should be taken with your largest meal.

**Recommended Brands:** [Jarrow Formulas Acetyl L-Carnitine](#), [Life Extension Acetyl L-carnitine](#), [Pure Encapsulations – Acetyl-L-Carnitine](#)

**Acetyl-L-carnitine arginate** – This specially chelated form of acetyl-L-carnitine is acetyl-L-carnitine bonded with the amino acid L-arginine. It is believed that the extra arginine in which the carnitine is bonded to crosses the blood-brain barrier and may increase blood flow to the brain. Acetyl-L-carnitine arginate is also an excellent form of carnitine for bodybuilders. This is because the extra arginine increases nitric oxide production in the body and acts as a vasodilator. Increased arginine supplementation has been theorized to increase blood flow to the muscles as well. The daily-recommended dose of acetyl-L-carnitine arginate for most people is 2,000 mg. I would not take more than 4,000 mg daily if possible because the excess acetyl-L-carnitine arginate might cause a fishy body odor and skin sensitivities at this large of a dose.

**When You Should Take the Supplement:** It should be taken with your largest meal.

**Recommended Brand:** [Life Extension Acetyl-L-Carnitine Arginate](#)

**Glycine propionyl-L-carnitine** – Propionyl-L-carnitine is the main recommended form of L-carnitine for patients with arterial blood flow problems and heart disease. The propionyl is also an extra donor to the coenzyme A cycle. Since L-carnitine works synergistically with coenzyme A, taking a propionyl-L-carnitine supplement is a great way to increase natural Coenzyme A production in the body. Propionyl-L-carnitine has been shown in studies to increase nitrate/nitrite production in the body as well. Extra nitrate/nitrites in the body have been known

to increase nitric oxide production theoretically. This is why propionyl-L-carnitine promotes proper arterial blood flow because the extra nitric oxide production is a potent vasodilator. This is also the preferred form of L-carnitine for patients with poor blood flow in their extremities, patients that suffer from intermittent claudication, and most athletes as well. The daily-recommended dose of propionyl-L-carnitine for most people is 2,000 mg. I would not take more than 4,000 mg daily if possible because the excess propionyl-L-carnitine might cause a fishy body odor and skin sensitivities at this large of a dose.

**When You Should Take the Supplement:** It should be taken with your largest meal.

**Recommended Brand:** Jarrow Formulas Glycine propionyl-L-carnitine

## **L-carnitine Supplementation Side Effects**

L-carnitine is safe for most people to supplement with daily and has very few known side effects. In some people, L-carnitine can cause upset stomach and indigestion, which can be relieved when the L-Carnitine supplement is taken with a meal instead of on an empty stomach. L-carnitine supplementation may also rarely cause nausea, vomiting, diarrhea, and seizures. L-carnitine can cause a patient to develop a fishy body odor if taken in quantities greater than 4,000 mg daily. There are also extremely rare systemic allergic reactions caused by L-carnitine supplementation in some people.

L-carnitine should be used in caution with people who have an underactive thyroid or people who have a history of seizures. Carnitine can make the symptoms of hypothyroid worse and may increase the frequency of seizures in people with seizure disorders.

## **NADH**

*NADH (nicotinamide adenine dinucleotide)* is also known as the reduced form of NAD<sup>+</sup>. NADH is a coenzyme that is found in all living cells. The NADH

compound consists of two nucleotides (organic molecules that make up DNA or RNA), joined by phosphate groups that contain either an adenine base or nicotinamide (vitamin B3) base. In humans, NADH is used in the body's metabolism, cellular respiration, energy production within the cells, and as an extremely potent antioxidant within our cells.

NADH, like D-ribose, is highly concentrated in the mitochondria of the muscle cells. Most of the time, the body can produce enough NADH to meet its demands. If the body happens to become overstressed, the body needs more NADH and NADH supplementation might be needed to help prevent a deficit. The same diseases and medical conditions that can be caused by a chronic depletion of D-ribose can also be from a depletion of NADH. These diseases and conditions include heart disease, heart failure, fibromyalgia, and chronic fatigue syndrome. Supplementation of NADH, along with D-ribose, might be helpful for people dealing with these conditions. D-ribose is also an active component of NADH, and if they are both supplemented together, they will have a synergistic effect on one another in the production of energy.

NADH is the principal carrier of electrons in the oxidation of molecules in mitochondria that produce energy in a cell. It also powers the electron transport process in membranes of mitochondria that allow the transport of energy within cells and between our cells as well. NADH stimulates the cellular production of neurotransmitters and is directly involved in the body's cellular immune system because NADH is used in DNA repair in cells.

High dosages of NADH may sometimes lead to insomnia, anxiety, fatigue, and overstimulation from excess energy production. If any of these side effects occur with supplementation, I would lower the dosage and see if the side effects persist. If you continue to have issues with the lowest possible dose, discontinue supplementing with NADH.

### **Recommended NADH Supplement:**

[Source Naturals Enada NADH](#)

*As much as I hate recommending tablets, this is the only safe NADH supplement I recommend. All of the known sublingual NADH tablets and lozenges have Kiollidan, a.k.a. vinyl acetate. If you like ingesting toxic carpet and wood glue, go ahead, but I would honestly stick with tablets for better health.*

# Heartburn / Stomach Issues

## Digestive Enzymes

Uses: Helps breakdown and digest food in the stomach, helps to improve fructose malabsorption, lactose intolerance, and gluten insensitivity digestion issues.

Brand: [Enzymedica Digestive Enzyme](#)

Side effects: RARE: systemic allergic reaction

Digestive enzyme supplements are usually made up of different enzymes that are used by the gastrointestinal system to break down foodstuffs. The main enzymes used are proteases (for protein), lipases (for fat), and carbohydrates (for carbohydrates).

### Different Digestive Enzymes Used in Supplements

- **Protease** - A digestive enzyme that is useful in digesting protein. Look for a good probiotic that uses different proteases.
- **Lipase** - A digestive enzyme that is useful in digesting fat. Look for a good digestive enzyme that uses different lipases. There are some concerns that long-term lipase supplementation may degrade the stomach lining.
- **Amylase** - A digestive enzyme that is produced by the saliva glands in humans, and in small amounts produced by the pancreas. Amylase is a digestive enzyme that catalyzes the breakdown of starches into simple sugars. If you have diabetes, you might want to use a digestive enzyme that has low amounts of amylase, or none at all. Amylase use in a person with diabetes might cause a major increase in blood glucose levels because of the rapid breakdown of starches into glucose in the stomach. Look for a good digestive enzyme that uses different amylases.

- **Cellulase** - A digestive enzyme that breaks down cellulose. Cellulose is mostly indigestible by the body and is a form of plant cell wall fiber.
- **Glucoamylase** - A digestive enzyme that breaks down maltose, a disaccharide sugar.
- **Lactase** - A digestive enzyme that breaks down lactose, a disaccharide sugar that is found in milk. Most people who are lactose intolerant, lack in the production of lactase that is the source of their digestive issues when consuming dairy products. Supplementing with lactase when consuming those products might help prevent digestive issues.
- **Beta-Glucanase** - A digestive enzyme that breaks down beta-glucans, a polysaccharide. Beta-glucans are found in oats, cereal grains, and mushrooms. Beta-glucans might also occur as some part of the cell wall of fungi and bacteria.
- **Invertase** - A digestive enzyme that breaks down inverted sugar. Inverted sugar is a combination of fructose and glucose.
- **Pectinase** -A digestive enzyme that breaks down pectin, a polysaccharide found in plant cell walls, mostly in fruit.
- **Hemicellulase** -A digestive enzyme that breaks down hemicellulose, one of the major components of plant and fungi cell walls.
- **Xylanase** - A digestive enzyme that breaks down the polysaccharide, beta-1, 4-xylan into xylose. Xylose is a building block of hemicellulose in some plants, one of the major components of the plant cell walls.
- **DPP-IV Enzyme** - A proteolytic/digestive enzyme that may degrade the immunodominant, proline-containing epitope of gliadin, the primary allergenic protein in gluten. In studies, DPP-IV has been shown to lessen or eliminate allergic reactions to gluten. That being said; it should only be used for people sensitive to gluten or someone with Celiac disease when the source of the food might be contaminated with gluten. The enzyme should NEVER be used for people with gluten digestive issues to consume gluten because damage may still be done in the body, even when the enzyme is used.
- **Bromelain** - Bromelain is a proteolytic/digestive enzyme found in the stem and fruit of the pineapple. Bromelain works as a natural digestive enzyme that helps to break down proteins. Bromelain also increases stomach-emptying time, which is helpful in the reduction of symptoms of

Gastroparesis. It has also been implicated in relieving the symptoms of gastrointestinal upset, aids in healing gastric ulcers by reducing inflammation, and helps with pancreatic insufficiency. It has also been shown to lower inflammation in people with IBD. Bromelain should also be limited to two weeks of use; it can be used longer, but the use must be warranted. It is possible for bromelain to degrade the stomach lining over a long period.

- **Papain** - Papain is a proteolytic/digestive enzyme that is found in papaya fruit. Papain works as a natural digestive enzyme to help break down proteins. Papain should also be limited to two weeks of use; it can be used longer, but the use must be warranted. It is possible for Papain to degrade the stomach lining over a long period.
- **Pepsin** - Pepsin is the main enzyme used by the stomach to digest protein. Pepsinogen activates and converts into the enzyme pepsin in the presence of stomach acid. Pepsin helps break down protein into amino acids the body can absorb and then becomes inactivated, by turning back into pepsinogen when it is mixed with bicarbonate released from the pancreas in the small intestine. This transformation protects the rest of the intestinal system from the pepsin and stomach acid. Pepsin should rarely be supplemented in people with silent reflux since it is the main cause of their issues. I recommend for most people to use a digestive enzyme or betaine supplement without pepsin if all possible.

Digestive enzymes should be used in people who have problems breaking down and assimilating foods. It is extremely beneficial for people with Celiac disease, gallbladder disorders, heartburn, and people suffering from SIBO.

To evaluate the quality of your digestive enzyme supplement, break open two capsules in a bowl of cooked oatmeal (let it cool to about 98 F first) and stir it with a fork for one minute. The oatmeal should break down into a liquid after a few minutes if you have a quality supplement. Finally, I would suggest supplementing with a digestive enzyme that uses as little fillers as possible

Digestive enzymes should be used sparingly, and during certain protocols, if needed. Digestive enzymes should not be used for a very long period. Long time use of digestive enzymes has been theorized to cause the body to make less of its digestive enzymes and can lead to dependency. If you take them for an extremely long period, their digestive system might need a boost by taking Swedish bitters to encourage endogenous production. The time period where your digestive system

produces fewer enzymes might cause some digestive problems to reoccur. You should just try to wait it out if all possible. Eventually, your body will catch back up. If you need to take digestive enzymes indefinitely, you should cycle off one week every month. During the off week, you should take Swedish bitters every day.

## Licorice

Uses: Strongly anti-inflammatory helps heal the mucus lining in the Stomach, has been shown to repair ulcers and is an actual prescription medication for ulcers in Germany, inhibits *H. pylori*, lessens abdominal spasms.

Brand: [Enzymatic DGL ULTRA chewable licorice](#)

Side effects: Non-DGL Licorice can cause water retention and elevation of blood pressure. DGL should only be used for a short period, because of the possibility that small amounts of glycyrrhizic acid still might be left in the supplement.

RARE: Hypersensitive Allergic Reaction.

Licorice is a plant native to southern Europe. The root of the plant is used in food and supplement preparation. Licorice has huge medicinal potential, but the main problem is the glycyrrhizic acid found in the licorice that causes most of its side effects.

Glycyrrhizic acid protects liver cells against injury in people with hepatitis, and it has antiviral properties. Glycyrrhizic acid is also used as a sweetener in food products. Glycyrrhizic acid causes water retention at high doses, and this can increase blood pressure and volume. In some cases, this can become fatal.

Glycyrrhizic acid depletes potassium in the body causing blood pressure to spike. In addition, the enzyme 11 $\beta$ -hydroxysteroid dehydrogenase is inhibited by glycyrrhizic acid causing a spike in cortisol. This sharp increase of cortisol can cause a dump of potassium in cells that increase potassium greatly in the blood plasma.

DGL Licorice lacks glycyrrhizic acid and is still theorized to have most of the anti-inflammatory processes of regular licorice. DGL is great in repairing ulcers,

gastritis of the stomach, and can inhibit *H. pylori*. DGL tablets must be chewed thoroughly, and saliva must mix well with it for it to work efficiently.

## **Limonene**

Uses: GERD, heartburn.

Brands: [Jarrow Formulas Limonene](#), [Heartburn Free Enzymatic Therapy Limonene](#)

Side effects: RARE: systemic allergic reaction

D-limonene is lighter than water, so it floats to the surface of gastric juices in the stomach. When someone has reflux, the D-limonene coats the esophagus protects the esophagus from acid and gastrin and helps heal erosions. D-limonene also increases gastric emptying and helps improve the flow of bile.

Joe S. Wilkins, the Houston-area scientist who developed this natural approach to heartburn relief, believes that the minor burping that occurs with D-limonene causes this orange peel extract to be directly carried into the esophagus. By coating the esophagus, D-limonene may protect the esophagus against caustic contents that would have otherwise been regurgitated from the stomach. D-limonene may promote quicker gastric emptying of food and gastric juices out of the stomach so that these esophageal irritants do not promote as much reflux. Finally, D-limonene might inhibit *H. pylori*, help the stomach produce extra mucus, and heal.

I recommend that you use either the Jarrow D-limonene or the Enzymatic Therapy supplement. Be sure to follow the supplement instructions.

## **Zinc Carnosine**

Uses: Heal ulcers, relieves gastritis, and helps stomach disorders.

Brands: [Pure Encapsulations Zinc Carnosine](#), [Doctors Best Zinc Carnosine](#)

Side effects: RARE: systemic allergic reaction

Zinc carnosine is a supplement that is the combination of the mineral zinc and the amino acid carnosine. Zinc is beneficial in decreasing wound healing time and increases immune functions. Carnosine is an amino acid that is highly concentrated in muscle tissue and has been shown to protect organs from oxidative stress.

Zinc binds quickly to stomach tissue if taken on an empty stomach. If zinc is taken on an empty stomach, it causes severe stomach pain and gastritis. It has been theorized that zinc ions are highly soluble in stomach acid and have corrosive, antimicrobial, and immune-stimulating properties that irritate the stomach tissue because of the direct absorption of the zinc ions. If you chelate zinc with carnosine, the chelation slows down the absorption and elimination of zinc from the stomach.

Zinc is then able to directly repair the stomach and intestinal tissue without irritating it so zinc-carnosine may be taken on an empty stomach as needed. Zinc carnosine also protects the stomach lining for opportunistic *H. pylori* infection and NSAID's damage that causes ulcers that can develop from long-term use of the medication.

High doses of zinc-carnosine may cause zinc toxicity and reduce immune function. Take no more than 45 mg of zinc carnosine each day totaling no more than 100 mg of elemental zinc a day.

## **Injury / Surgery Healing**

### **Collagen**

Uses: Improve skin, joint, and tissue repair.

Side effects: RARE: systemic allergic reaction

Most people take collagen supplements to improve the health of their joints and skin. Many athletes use collagen as a source of protein and to improve the recovery and health of their overused joints. Collagen peptides are utilized in the cosmetic industry to reduce wrinkles, rejuvenate skin, and give you that coveted glow, but did you know that the ingestion of the different types of collagen might improve

your digestive health and can even affect the probiotic growth of your microbiome?

## So What Is Collagen?

Collagen is a naturally occurring protein that is found the most in flesh and connective tissues. Collagen also contains many different amino acids, and most collagen supplements are high in glycine and proline. Glycine is used by the body as an inhibitory neurotransmitter, protects against glutamate hyperexcitability, and promotes relaxation and sleep. Glycine also helps improve insulin insensitivity, reduces inflammation, and improves liver function. We use proline to complete protein synthesis, proper metabolism, reduce atherosclerosis, and regulate immune responses. Glycine and proline can both be produced by our body from other amino acids, but only if you take in enough clean protein in your diet. Ingestion of collagen would provide both amino acids and more like glutamine, lysine, and arginine to improve your health.

These are three types of collagen that you can mainly supplement with:

- **Type 1 collagen** – most abundant collagen in the human body. It is present in scar tissue, tendons, skin, arterial walls, cornea, surrounds muscle fibers, fibrocartilage, intervertebral disks, and bones and teeth. Its use is important in improving muscle, eye, skin, cardiovascular, bone, wound, and back health.
- **Type 2 collagen** – found in joint cartilage, intervertebral disks, and the vitreous body of the eye. Its use is important in improving joint, back, and eye health.
- **Type 3 collagen** – the second most abundant type of collagen in the human body. It is found in the intestinal walls, reticular fibers, uterus, muscles, blood vessels, and combined with type 1 collagen. Its use is important in improving digestive, uterine, muscle, and cardiovascular health.

The digestion of collagen begins in the stomach. The first step in digestion consists of the breakdown of collagen to form dipeptides and tripeptides or free amino acids in the stomach. Several proteases (proteases produced by the pancreas, small intestinal brush-border proteases, peptidase) further break down the collagen into

amino acids, which some are used in the gastrointestinal tract and the rest enter into systemic circulation. Finally, some of the collagen peptides are fermented by *Bifidobacteria* and act as a prebiotic, increasing both probiotic colonies and motility.

Here are the recommended types of collagen to be used with different health issues:

- **Cardiovascular** – if you want healthier cardiovascular health a type 1 and 3 supplement and Biocell or alternating ingestion of chicken and beef bone broth should be supplemented.
- **Eyes** – type 1 and type 2 should be supplemented for proper health.
- **Joints** – if you are having joint issues a type 2 collagen supplement like Biocell may help improve your joint health. Biocell collagen is a collagen supplement that is made from the hyaline cartilage of chicken sternum. The supplement itself has type II collagen, hyaluronic acid, and chondroitin sulfate. The body to lubricate joints uses hyaluronic acid. Chondroitin is a chain of alternating sugars that help make up the structure of cartilage. Biocell contains all three and might be the best to improve the health of your joints. Ingestion of chicken bone broth can also be used.
- **Intestinal** – for intestinal health all three collagen types should be supplemented. A type 1 and 3 supplement and Biocell or alternating ingestion of chicken and beef bone broth.
- **Skin** – if you want healthier skin a product with type 1 and type 3 collagen or hydrolyzed collagen peptides should be used.
- **Spine** – for spinal health, all three collagen types should be supplemented. A type 1 and 3 supplement and Biocell or alternating ingestion of chicken and beef bone broth.
- **Uterus** – type 3 collagen should be a supplement for proper uterine health.

## **How Does the Ingestion of Collagen Improve Digestive Health?**

Ingesting collagen has many different positive effects on our digestive health. As I wrote earlier, collagen is high in the amino acid glycine, which improves digestive health, regulates inflammation, protects the mucosal barrier, and improves enterocyte function in the intestinal tract. It protects against systemic endotoxin

damage from leaky gut. Glycine also protects the liver and aids in detoxification and bile acid production. Finally, glycine improves fructose malabsorption.

Collagen can also be used as a prebiotic to increase *Bifidobacteria* growth and increase motility. Collagen increases all necessary amino acids to facilitate proper *Bifidobacteria* growth. The amino acids that are in collagen can be broken down by *Bifidobacteria* and used for energy and growth just like carbohydrate sourced prebiotics like GOS.

If you are on a low carb, very low carb, or no carb diet it is paramount that you ingest collagen supplements or beef and chicken bone broth regularly. The ingestion of collagen would help you maintain the integrity of your mucosal barrier, improve mucus membrane health in the entire body, protect microbiome diversity and population, and keep proper energy production by the bacteria in our microbiome.

If you have ulcerative colitis and Crohn's disease or other forms of *MAP* overgrowth you might want to avoid bovine sourced collagen and stick with poultry and marine sources. Granted *MAP* contamination of collagen or bone broth should be very limited; it is still advised for most people to prevent flare-ups.

Finally, collagen derived from marine sources might be the best in improving leaky gut. Collagen derived from fish has been shown to close the tight junctions of the intestinal tract reducing permeability.

## **How to Increase Collagen Ingestion and Endogenous Synthesis to Improve Health**

There are many different ways you can increase collagen intake in your daily life.

You can take type 1, type 2, and type 3 collagen supplements. The collagen supplements I recommend are:

**Type 1:** [Bulletproof Upgraded™ collagen](#), [Great Lakes collagen](#)

**Type 2:** [Biocell](#) (poultry source), [Vital Proteins](#) (beef source)

**Type 3:** [Bulletproof Upgraded™ collagen](#)

**Collagen peptides:** [Vital Proteins collagen peptides](#)

**Marine:** [Seacure](#), [Vital Proteins marine collagen](#)

Ingestion of chicken (type 2 collagen) and beef bone broth (type 1 and 3 collagen) would also provide collagen to improve your health.

Supplementation of [vitamin C](#) and copper (if you are deficient) are both important in encouraging proper endogenous synthesis and utilization of collagen. I suggest if you are using a collagen supplement or increasing it in your diet to take a low dose of a few grams of ascorbic acid daily to increase the potential of collagen helping your issues. For copper, most people may have too much copper in their bodies, that being said ingestion of beef liver once or twice weekly should provide enough ceruloplasmin-bound copper to help improve collagen synthesis and utilization.

## **L-glutamine**

Uses: Supplementation after surgery for tissue repair.

Brands: [Now L-Glutamine powder](#), [Thorne Research L-Glutamine powder](#)

Side effects: RARE: systemic allergic reaction

L-glutamine is an amino acid that is used by the body for protein synthesis, regulation of pH balance in the kidneys, cellular energy, nitrogen donation, and a nontoxic transporter of ammonia in the blood. Intestinal cells consume more L-glutamine than anywhere else in the body does. The intestines using large amounts of glutamine for repair is why it is so important for gut healing.

L-glutamine maintains the gut barrier and helps with the mucus barrier.

L-glutamine reduces hospital recovery time after surgery because it increases white blood cell activity at the site of injury. During injury and times of great stress, large amounts of a hormone called cortisol are released. The body uses L-glutamine to counteract some of the catabolic effects of excess cortisol in the body and block some of the cortisol receptors to lower its production and use within the body. Excessive amounts of cortisol are known to deplete L-glutamine stores in the body.

If you are going to have surgery, I recommend the intake of 10,000 mg of supplemental glutamine for at least a week after. Ask your doctor if this is okay during your recovery.

People with cancer should avoid L-glutamine supplementation because the cancer cells will use it for energy and replicate faster.

## **Infection (Internal)**

### **Lactoferrin**

Uses: SIBO, bacterial and viral infections, yeast overgrowth, hepatitis C.

Brand: [Jarrow Formulas Lactoferrin](#)

Side effects: RARE: systemic allergic reaction

Lactoferrin is a multifunctional protein that is one of the many components of an animal's innate immune system. Lactoferrin exhibits potent antimicrobial activity and can easily be extracted from most mammals milk (mainly from cows, goats, and sheep).

Lactoferrin has potent antibacterial properties; it can destroy both opportunistic bacteria itself and the biofilm that some bacteria love to use as armor from anti-bacterial. Lactoferrin scavenges extra free iron in the body and binds to lipopolysaccharides in the bacterial cell walls. These reactions cause bacteria not to be able to use iron for respiration, which is necessary for bacteria growth and function. When lactoferrin binds to lipopolysaccharides in bacterial cell walls, the oxidized bonded iron scavenged by the lactoferrin creates excessive oxidative damage. Lactoferrin also damages the bacterial cell membranes causing them to lose permeability. Finally, lactoferrin stimulates the immune system by increasing the phagocytic ability of white blood cells.

Some bacteria produce protective biofilms (one of the most common examples of a biofilm is the “film” on your teeth when you have not brushed for a while) that make eradication sometimes with antibacterial agents very difficult. Biofilm

protects the bacteria from elimination by antibiotic treatments, natural antibacterial agents, bactericides, and probiotics. To eliminate the opportunistic bacteria, you have to destroy the biofilm that it is hiding behind. Lactoferrin breaks down bacterial biofilm by chelating iron out of the biofilm cell walls so that the biofilm breaks down and dissolves. The immune system and antibacterial agents are now free to eliminate the opportunistic bacteria.

Finally, lactoferrin may help prevent the attachment of *H. pylori* to the stomach lining, leading to its eventual elimination from the body.

Lactoferrin is used in the treatment of Hepatitis C and other viral infections because it also processes potent antiviral properties. Lactoferrin binds to lipoproteins in vitro and prevents viruses from entering a cell for replication. Lactoferrin may also bind to viruses, directly blocking them from being able to bind to host cells in the body for replication. Viruses without a proper cell host are eventually eliminated by the body's innate immune system. Finally, lactoferrin may also suppress cellular viral replication once a cell has been infected further to hinder a viral infection.

Iron-free apolactoferrin might be the best form of lactoferrin to eliminate viruses because the iron binding action of lactoferrin is useless in combating viral infections. Research apolactoferrin to see if it applies to your condition.

Lactoferrin has been shown to have anti-fungal and yeast activity, but the mechanism is not yet known. There is a theory proposed that lactoferrin can destroy the cell walls and bind to the plasma membrane of *Candida albicans*. Lactoferrin has been shown to help control yeast infections in a few in vivo / in vitro studies.

Lactoferrin might be able to be supplemented on a low dose of 250 mg on a daily basis long term safely if needed. Honestly, though I would only supplement lactoferrin if I had an infection or believed that I might be getting an infection. The average dosage that would be taken if you were ill ranges from 750 mg - 2,000 mg a day, depending on the severity of the infection. Always take lactoferrin in divided doses throughout the day with food.

The only known side effect of my knowledge of lactoferrin supplementation is that a rare systemic allergic reaction may occur (you may be more susceptible to a reaction if you are allergic to cow's milk, which most lactoferrin is produced from).

## Lauricidin

Uses: SIYOS, *Candida* opportunistic infection, yeast overgrowth, viral infections.

Brand: [Lauricidin](#)

Side effects: RARE: systemic allergic Reaction

Lauricidin is a supplement that contains a high concentration of purified monolaurin.

Lauric acid (a fatty acid found in coconuts and breast milk) is converted into monolaurin in the human body that has potent antibacterial and anti-yeast properties. There is some antidotal evidence that the monolaurin content of breast milk is why it cures thrush in infants.

Monolaurin has been theorized to be able to keep yeast cells from being able to attach to the cell walls in your body so that they are destroyed by the immune system or eliminated from the body. Finally, monolaurin has been shown in studies to have possible anti-viral properties as well.

Monolaurin is non-toxic to humans and should not cause any major reactions except for the occasional rare systemic allergic reaction. Monolaurin might cause a strong herx reaction with large amounts. Therefore, it is always best, to begin with a small dose.

## Oregano Oil

Uses: Strongly antibacterial, and anti-yeast.

Brand: [North American P73 Herb & Spice liquid and capsules](#)

Side effects: RARE: hypersensitive allergic reaction, stomach upset from oil ingestion

Oregano is a plant from the mint family and is native to the Mediterranean region. Oregano has a high amount of antioxidant activity because of the high amount of phenolic acids and flavonoids found in the oil. Carvacrol and thymol are the main components of oregano oil that have the antibacterial and anti-yeast properties.

Thymol is a monoterpene phenol that has been shown in studies to inhibit the opportunistic growth of *E. coli* and *S. aureus*. Thymol inhibits bacterial growth and lactate production in bacteria causing decreased cellular glucose uptake.

Carvacrol is a monoterpenoid phenol that has been shown to inhibit the opportunistic growth of *E. coli*, *S. aureus*, and *Bacillus cereus*. The mechanism of action of the antibacterial properties of carvacrol is that carvacrol disrupts bacterial membranes

## **Infection (External)**

### **Alliderm**

Uses: Antimicrobial skin cream.

Brand: Alliderm

Side effects: RARE: systemic allergic reaction

Allicin is an antimicrobial organosulfur compound that is well studied and found in garlic. Allicin is very unstable, and very little survives from ingestion of garlic because of the rapid chemical breakdown of allicin when exposed to heat, or low pH.

Alliderm is a stabilized cream form of allicin that is effective for eliminating bacterial infections on the skin. Allicin cream has been shown to be extremely effective in eliminating MRSA.

## Colloidal Silver Cream

Uses: antimicrobial

Brands: [Sovereign Silver Gel](#)

Side effects: RARE: Systemic allergic reaction, EXTREMELY RARE: Argyria (a condition in which the skin turns blue from excess Silver deposits).

Colloidal silver (particles of silver that are suspended in a medium) is a very potent antimicrobial agent. This silver ion chelates sulfur and iron from bacteria that causes reactive oxygen species to build up (oxidative stress) in the bacteria and destroy it. Silver also pokes small holes in the bacteria's cell wall that both makes it easier for antimicrobials and Immune cells to destroy it as well as cause more oxidative stress damage to the bacteria.

The problem with advocating silver is that there are not many in vivo studies, in humans. There are plenty of studies that show that silver is an effective antimicrobial on skin, but the internal take of silver having antimicrobial effects lacks in studies currently. Internal silver consumption should bolster the immune system nonetheless. Use silver creams to keep cuts, wounds, and burns from becoming infected and reduce recovery times.

## Manuka Honey

Uses: Extremely antimicrobial, helps protect and heal skin injuries, anti-opportunistic bacteria.

Brand: Look for a brand that might be organic, the honey should have a high active count, and one might look for pharmaceutical grade Manuka honey if it is available.

Side effects: RARE: systemic allergic reaction

Manuka honey is a type of honey that is produced in New Zealand. The honey that is collected is made from tea tree nectar that is concentrated into the honey. Tea tree oil is widely known for its antibacterial properties. Methylglyoxal is the major

antibacterial component of Manuka honey and has been shown to be effective against MRSA infections.

Manuka honey also has a high, natural hydrogen peroxide bioavailability that might also explain its antimicrobial properties. Manuka honey is used in hospital burn wards as a salve to help eliminate opportunistic bacteria from burned damaged skin, to help it heal. If you are going to use manuka honey for external injuries like cuts and burns, try to use manuka honey that is pharmaceutical grade. Apply a thin layer of the honey, and bandage the wound.

## **Pain / Inflammation**

### **Boswellia**

Uses: Reduces inflammation and pain.

Brands: [Himalaya Boswellia](#), [Pure Encapsulations Boswellia](#)

Side Effects: RARE: hypersensitive allergic reaction, possible hepatotoxicity with large doses (in vivo in rats only, no human report cases)

Boswellia is a tree native to India. The incense, frankincense, is obtained from the resin of the Boswellia tree. I recommend using an extract of *Boswellia serrata*.

Boswellic acids have been shown to produce anti-inflammatory effects by limiting the overproduction of leukotrienes. Leukotrienes are a type of white blood cells that help in the production of histamines and prostaglandins that greatly worsen inflammation and pain if over stimulated.

Boswellia also inhibits TH1 cytokine production and instead promotes cytokine TH2 production. Most TH2 cytokines are anti-inflammatory and analgesic cytokines that help reduce pain. An overabundance of TH1 cytokines, on the other hand, have been linked to chronic pain and inflammation.

There are many related species of *Boswellia*, but I would recommend avoiding *Boswellia elongata* because it has been shown to be an active ACE inhibitor. Even though, ACE inhibitors reduce blood pressure their use comes at a cost. Ace inhibitors reduce zinc levels within the body and can cause adrenal fatigue by limiting proper aldosterone production and feedback loops.

## **Cayenne Cream**

Uses: Reduces inflammation and may reduce pain by activating the TRPV1 receptors.

Brands: [Dr. Christopher's Cayenne Heat Ointment](#)

Side Effects: RARE: hypersensitive allergic reaction.

Capsaicin binds rapidly to receptor TRPV1. When TRPV1 is first activated, it causes an inflammation response from prostaglandins and bradykinin being released. The activation of TRPV1 is what gives us a feeling of scalding heat and pain when we either touch something hot or when we eat something very spicy.

If the TRPV1 receptors are activated very strongly or over a period (application or ingestion of capsaicin) become desensitized, and pain is dramatically reduced because the receptors then become overburdened and inactivate. This inactivation also reduces pain because it numbs the area the receptors are activated and reduces inflammation because fewer prostaglandins and bradykinin are released in the area over time.

## **Curcumin**

Uses: Strongly anti-inflammatory which helps relieve pain, COX-2 inhibitor, anti-cancer properties.

Brands: [Life Extension Bio Curcumin](#), [Thorne Research Meriva-SR](#)

Side effects: RARE: hypersensitive allergic reaction, people on blood thinners should use caution

Turmeric is a plant native to South Asia and is related to ginger. Turmeric is a rich source of the curcuminoid, curcumin, which is being studied immensely for its health properties. Curcumin is a potent anti-inflammatory and is being used to relieve symptoms of arthritis and to help with people suffering from IBD. Curcumin also has some anti-tumor properties, as well.

Curcumin has also been shown to increase glutathione levels in the body by up regulating the transcription of genes that encode GCL (the enzyme that converts L-glutamate and cysteine into glutathione).

Curcumin reduces pain as a known COX-2 inhibitor and by being extremely anti-inflammatory. Curcumin, unlike most prescription COX-2 inhibitors, does not have the adverse cardiovascular effects associated with those medications and seems to be good for the heart.

Curcumin thins the blood by inhibiting platelet aggregation; because of this, it increases the bleeding risk of people who are taking anticoagulants. In high doses, curcumin lowers iron levels in the blood by suppressing hepcidin (a hormone that regulates iron usage and storage in the body).

## **Menthol Cream**

Uses: Relieves pain on contact.

Brand: [AEO Menthol Cream](#)

Side effects: RARE: systemic allergic reaction

## **On the Importance of Menthol and Pain Relief**

Menthol is an organic compound that can be obtained from peppermint oil. Menthol has quite a few known medicinal properties, including:

- Pain relief - Menthol weakly activates the k-opioid receptors, which can be beneficial for pain relief. Different substances can activate the Kappa-opioid receptors in the brain. When the receptors are activated by these various substances (including menthol), they change both the perception of pain by the brain and reduce inflammatory pain nerve signaling pathways in the body, therefore, increasing the pain threshold.
- Muscle relaxant - Menthol's mechanism of action as a muscle relaxant is by blocking voltage-sensitive sodium channels in the neuromuscular junction. This blockage reduces neural activity in the muscles, which in turn relaxes the muscles and reduces muscle spasms.
- Vasodilatation - Menthol is a known vasodilator when it is applied to the skin. It increases blood flow to capillaries in the skin by dilating veins that are close to the dermis, or the top layer of the skin.
- Activating TRPM8 receptors - Menthol can chemically activate the TRPM8 receptors in the skin. These receptors are responsible for the cooling sensation that menthol is known for when menthol is inhaled, eaten, or applied topically to the skin. Activating the TRPM8 receptors has also been theorized to be a potential protocol for eliminating prostate cancer. Finally, TRPM8 receptors that are activated in the intestinal tract correctly modulate inflammatory responses and can help to correct an overactive immune system in people suffering from inflammatory bowel diseases.

## **R-Lipoic Acid**

Use: Reduces nerve pain, strengthens nerve pathways.

Brands: [Geronova R-Lipoic Acid](#), [Life Extension R-Lipoic Acid](#), [Jarrow Formulas R-Lipoic Acid](#)

Side effects: RARE: systemic allergic reaction, rash, and foul smelling urine, lowers blood sugar so use with caution if you have blood glucose control issues

R-lipoic acid is probably one of the most important supplements when it comes to relieving complications caused by nerve damage. R-lipoic acid reverses diabetic neuropathy, restores proper liver function and reverses insulin resistance. Lipoic acid is produced in the body as an antioxidant and has many functions. One of its primary functions is to transport insulin into cells that have been overloaded with

glucose. Lipoic acid also helps reverse the excitability of nerves leading to less neuropathy and pain.

Taking R-lipoic acid supplements also increases glutathione levels in the body. The increase in glutathione improves liver function and fights against cancer. Finally, lipoic acid helps the body recycle and retain vitamins C and E preventing cellular damage.

The only known side effects of lipoic acid supplementation are odd-smelling urine, paresthesia, skin rash, and muscle cramps. These side effects are more commonly seen in the less expensive, synthetic alpha lipoic acid instead of the natural R-lipoic acid. Lipoic acid is also a potent chelator so do not take it with mineral supplements. If you are mercury toxic, it can cause side effects like tingling, brain fog, and changes in mood. The lipoic acid binds to the mercury, and it is removed from the body.

Take lipoic acid with food because the supplement may lower blood glucose levels.

## **White Willow Bark**

Use: Contains natural salicin, which is the unrefined form one of the principal components of aspirin (salicylic acid), COX-2 inhibitor.

Brand: [Now White Willow Bark](#)

Side effects: RARE: systemic allergic reaction, stomach upset, ulcers, nausea, vomiting, and stomach bleeding. VERY RARE: increased chance of hemorrhage, skin rash, stomach inflammation/irritation, nausea, vomiting, kidney inflammation, and tinnitus (ringing in the ears).

The white willow tree is native to Europe and central Asia and has known medicinal pain relieving and fever reducing properties for ages. It was later discovered in the 1800's that the compound salicin was the reason for the pain relief properties of the bark. It was later discovered that salicin is a natural COX-2 inhibitor. Salicylic acid is the main component of the drug aspirin (aspirin is

produced now synthetically, but in the past, it was made from the bark of the willow), and is the refined form of salicin.

I suggest taking white willow bark with food; it can be hard on the stomach lining like aspirin. Also, never give white willow bark to children under the age of eighteen due to the chance of developing Reye's syndrome.

Even though white willow bark is natural, it still has to be used with caution just like aspirin. White willow bark side effects are considered minor still nonetheless are listed at the top and are similar to taking aspirin. Just like aspirin do not use it if you are allergic to salicylates, pregnant, diagnosed with an ulcer or taking blood thinning medications / NSAIDS.

## **Sleep**

### **L-theanine**

Uses: Helps with sleep disorders, relieves stress.

Brand: [Doctor's Best L-theanine](#)

Side effects: RARE: systemic allergic reaction

L-theanine is an amino acid found in tea. It was discovered by the Japanese in 1949.

L-theanine can cross the blood-brain barrier. It has been shown to reduce mental and physical stress, improve cognition, boost overall mood, and promote alpha waves in the brain. It might also inhibit glutamate excitotoxicity in the brain.

L-theanine supplementation might help reduce stress and promote sleep if taken before bed.

If you use any l-theanine supplement, I caution to make sure it is made with Suntheanine. Suntheanine is the best supplemental brand of L-theanine and is supposed to be the purest.

# Melatonin

Uses: Helps with sleep disorders.

Brands: Thorne Research Melatonin, Pure Encapsulations Melatonin

Side effects: RARE: systemic allergic reaction

Melatonin is a hormone that is produced by the pineal gland that causes drowsiness to prepare the body to sleep. Melatonin is also a very potent antioxidant and immune system regulator. Melatonin is made from 5-HTP in the brain by the pineal gland.

Melatonin is important in natural circadian rhythm of human beings. It is produced by the pineal gland when no blue light is visible by the human eye. There are some studies that show that even light shining on the skin can also decrease melatonin production but not to the extent of visual interaction. I would suggest making your bedroom as dark as possible at night and wearing blue light blocking glasses an hour before bedtime.

Only low doses of melatonin (less than one mg) should be used sporadically if you are having sleep issues. Melatonin should rarely be used over an extended period. Melatonin is a potent hormone and large doses, and chronic use of it can cause dependence and weight gain.

Try to improve your sleep hygiene before melatonin supplementation. Limit nEMF in the bedroom, keep the temperature between 67 and 70, sleep on a natural latex mattress, keep the room dark as possible, wear blue light blocking glasses one hour before bed, and do not watch TV or use the computer an hour before bed to help improve your sleep hygiene.

# Chapter 13

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