



2013 Optimum Health Vitamins Supplement Guide

WHAT TO LOOK FOR WHEN YOU'RE BUYING

1st Edition

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THE BEST OF *nature* AND *science*

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If people are given the right advantages educationally, economically and nutritionally, there is no telling how quickly this world could change for the better.

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Forward:



Walking into any health food store can be an overwhelming task. With aisles and aisles of supplement bottles lined up in perfect rows and skincare sections filled with the latest organic brands, even the most well-intentioned and informed of us can get confused. Normally, you'd flag down a store employee and ask for some help, whereupon you would be directed to the correct section... but you're still left with a dizzying list of possible

supplement choices. So, how do you negotiate it all and make sure you are getting the correct supplement for your body's needs ?

In this 2013 Optimum Health Vitamins Supplement Guide, we will go through the various sections of a health food store and discuss how you can ease the burden of deciding which supplement is good for you. For each supplement type, we will offer some guidelines that can help empower you in making your own supplementation decisions.

Yours in Health,

Nakita Valerio, B.A, CSN, BMSA Technician

The Basics:

VITAMINS AND MINERALS

Walk into any health food store and one of the first things you are bound to see (after your favourite health consultant behind the counter!) is a huge display filled with supplements that contains most of your common vitamin and mineral supplements, (excluding herbs and combinations of such.) This wall is sometimes a loosely alphabetical conglomerate of vitamin and mineral supplements, organized from Vitamin A in the top-left corner to Zinc in the bottom-right! In between you have the B Vitamin family, an array of Vitamin Cs, the ubiquitous Vitamin D, multivitamins, antioxidants, calcium-magnesium, multimineral supplements and your individual minerals from Boron to Zinc! So how do you even begin to negotiate this section?

Well, it's easiest to go one supplement category at a time, so let's start at the beginning...

VITAMIN A:

Vitamin A is actually a vitamin family that includes Retinol, and usually the carotenoids. Many pharmacies sell Vitamin A in its synthetic form (acetate) which has been shown to cause birth defects and toxicity when taken for prolonged periods of time. Luckily most health foods stores only carry the natural forms of Vitamin A and so you are left to figure out which one is best for you, or if you need to take it at all. Vitamin A is essential for the following metabolic functions: vision, gene transcription, maintenance of mucus membranes, immune function, embryonic development, bone metabolism, skin health and its natural antioxidant activity. If you find it in your multivitamin and you consume Vitamin A-rich foods daily, it is unlikely that you need to supplement with a Vitamin A product at all, unless directed by your qualified health-care practitioner, (though dry painful eyes that are sensitive to light can be a tell tail sign of low vitamin a status.)

The safest way to contribute to healthy Vitamin A levels in the body is by taking what are called "ProVitamins" – i.e. A substance that your body can transform into Vitamin A and utilize as-needed without the risk of toxicity. Such substances, in the case of Vitamin A, are the carotenoid family,

especially Beta-carotene. I recommend products like BetaCareAll by Natural Factors for its food-form full-spectrum carotenoid complex found in a similar way to how we would get it in nature. Your body takes what it needs and leaves the rest.

Vitamin A-rich foods include: liver, dandelion greens, carrots, sweet potatoes, butter, kale, spinach, pumpkin, collard greens and cantaloupe melons.

THE B VITAMINS:

This section contains a variety of B vitamin combinations which include the entire family of B Vitamins. Here also you will find individual B vitamins, and B-vitamin-like substances that are not technically “vitamins” (meaning essential). Normally, I recommend taking a combination supplement for most people to combat excess stress, deficiencies from vegetarianism, or other common lifestyle factors. As B Vitamins are water-soluble, it is best to take them through the day in divided doses. For example, you might take your multivitamin with breakfast and an additional capsule or two of the B vitamin combination later in the day.

But how do you decide on a formula? There are B50s, B100s, B vitamins with stress-support herbs, Stress complexes that include 1000mg of Vitamin C and so forth. For me, I consider one of the most important components of a B vitamin complex to be the form of the B vitamins present. There are pre-converted forms of B vitamins which eliminate an additional metabolic transformation in the body and therefore can lead to better utilization. A great example of a combination source of these pre-converted B vitamin forms, (in a chlorophyll capsule to naturally deodorize those stinky Bs!) is the AOR Advanced B complex. At 3 capsules a day, in divided doses, this product offers maximum nutrient delivery.



Below is a chart of the common forms of B vitamins and ideal or pre-converted forms to look for if you can find them:

Common Forms	Ideal Forms
Vitamin B1 (Thiamine Hydrochloride)	Benfotiamine
Vitamin B3 (Nicotinic Acid)	Inositol Hexanicotinate, Niacinamide *
Vitamin B6	Pyridoxal-5-Phosphate
Folic Acid	5-methyltetrahydrofolate

**This form of B3 refers to the non-flushing form of the Vitamin and should be taken by those who don't wish to experience the unpleasant flushing side effects of taking straight nicotonic acid. However, for those seeking to take B3 for the purposes of regulating cholesterol levels, the "flush" has been clinically proven to be more effective than other non-flushing forms of B3.*

Individual B Vitamins are usually taken when some deficiency has been diagnosed, or there is a greater overall need for a specific B vitamin over the others. Here is a list of general, common reasons people take one over and above their complex:

- Biotin: energy, hair growth
- Vitamin B1: nervous system
- Vitamin B2: red blood cell production, regulating growth
- Vitamin B3: Cholesterol, schizophrenia
- Vitamin B5: energy, regulating growth
- Vitamin B6: female hormones, immune system, controls mood
- Vitamin B12: red blood cells, anemia, pernicious anemia, nervous system abnormalities, fatigue
- Folic Acid: pregnancy (prenatal and 1st trimester particularly), anemia

Note: It is important to remember that when it comes to vitamins and minerals the symptoms of excess can be exactly the same as those of deficiency, and individuals can vary greatly in their requirements. For example, regarding the B vitamins if cracks or sores in the corner of the mouth persist after extensive supplementation you might consider stopping use.

VITAMIN C:

The Vitamin C section can be particularly challenging as you have shelves full of bottles that appear the same, but have seemingly small differences between them. What do I recommend? First of all, straight-up Vitamin C (ascorbic acid) is never found alone in nature, as you would find it in some supplements. It's best to find Vitamin C supplements that have been bonded to some kind of mineral. In the case of Ester C products, for example, the ascorbic acid has been bonded to calcium and usually includes bioflavonoids that would also be found in coexistence with Vitamin C in nature.

I am a big fan of the Ester C Supreme by SISU, which also includes arabinogalactans from larch that have a powerful effect on modulating the immune system. They can also be used preventatively in the following conditions: common cold, influenza, H1N1, ear infections in children or hepatic encephalopathy. It's great to consume on a regular basis to prevent a host of seasonal conditions.



Do you really need to be taking extra Vitamin C at all though? That depends mostly on your diet. Vitamin C-rich foods are not too hard to find, but it depends on what you're consuming daily. Generally, it's not a bad idea to have a bottle of Vitamin C in the cupboard either way, just in case something crops up and you need to nip it in the bud. Vitamin C in large doses can also help with seasonal allergies and the occasional bout of constipation.

Vitamin C-Rich foods include: Chili peppers, guavas, Bell peppers, fresh herbs, dark leafy greens, cruciferous veggies, papayas, oranges and tangerines, and berries!

VITAMIN D:

Particularly for those living in Northern climates, Vitamin D is something that pretty much everyone should be taking. Doctors have long-since stopped testing for deficiencies of this “sunshine” vitamin, because most people were deficient in it every time! The key when choosing Vitamin D is to check for

the optimal form. You need to look for Vitamin D3, or the “cholecalciferol” form derived from fish oil, or from sheep lanolin in most supplements. While this may not be veggie-friendly, it is important to note that the sheep don't die in the process, but merely receive a haircut when harvesting the vitamin-rich lanolin oils on their skin. The alternative is vitamin D2, (ergocalciferol) from vegetarian sources, which is not utilized nearly as well as D3.

What form you take Vitamin D3 in is of secondary importance. A lot of people make a big deal about microencapsulation or liquids inside softgels being marginally more absorbable, and that's fine if you want to split hairs. The real concern with Vitamin D is how much you take, and a lot of people just aren't getting that right.

The amount of Vitamin D one needs to be optimally healthy has been grossly underestimated, and as such, most people aren't taking enough... in particular in relation to where they live. This stems from two misconceptions: firstly, that vitamin D is fat-soluble which, while being true, is a non-issue for northern climate dwellers who usually burn through the vitamin far faster than their bodies can store it. This eliminates the general concern of toxicity for most, but not all, people. Secondly, being overly cautious about Vitamin D intake levels stems from a myth that the tolerable levels of Vitamin D are 2000IU per day! But what people don't realize is that these estimations are a giant net cast over all of North America – in other words, it doesn't take into account the fact that people who live in northern Canada have dramatically less sun-to-skin exposure than their Californian or Floridian counterparts!



Why is this relevant? What does the sun have to do with Vitamin D levels? OK, I have to back up here and explain that the other way for our bodies to get adequate levels of Vitamin D is to produce it ourselves from the sun. The sun's UV rays react with cholesterol under the surface of our skin and produce the life-giving vitamin which is then converted twice (once in the liver, once in the

kidneys) into what is actually a pro-hormone. Depending on the level of pigmentation in your skin (fairer skins produce much more, darker skins much less) the amount you produce in the sun can easily dwarf what you would get in a supplement. In fact, in just 30 minutes of southern sun exposure, the average fair-skinned person with minimal clothing and no sunscreen will produce roughly 30 000IU! This makes 2000IU per day seem a bit irrelevant. So get your sunshine! Or if you live in a northern climate (where winter sunshine doesn't produce any vitamin D anyway), take your supplements to ensure a strong immune system, a healthy mood and literally hundreds of other metabolic effects that are too numerous to list here!

Note: The reason no vitamin D is produced by winter sunshine in northern climates has to do with the angle at which the sun's rays are striking that part of the Earth.

VITAMIN E:

This is another one that a lot of people get confused about and it's because of the form that mass market chains and/or pharmacies usually sell, particularly its synthetic "d" form.

Vitamin E is actually a family of 8 chemical substances that naturally occur together in nature. Yes, it is true that the most prevalent and relevant of the natural forms is d-alpha tocopherol, and this is what most supplements proclaiming to be Vitamin E are comprised of. But when has separating natural substances from their God-given balance ever truly benefitted us in the long-term? Not to mention the fact that we lose a whole host of benefits provided by all of the other natural tocopherols and tocotrienols when we take a "non-mixed" Vitamin E, i.e. one that does not contain all 8 natural isomers (forms).

The best vitamin E products on the market are those that have balanced mixes of all members of the Vitamin E family, and particularly emphasize levels of gamma-tocopherol, which is known for its antioxidant and anti-inflammatory properties.

Not everyone needs to take extra Vitamin E, particularly people who eat a vitamin E-rich diet, and take a multivitamin daily that contains it. The typical supplement range is 200iu to 800iu per day unless otherwise advised by a health practitioner.

VITAMIN K2:

This is a relatively new addition to the shelves of most health food stores. Though the long list of vitamin K's benefits may sound sensational to a skeptic, more and more research is confirming its extremely important role in our health.

First of all, the biggest question we get from clients is this: what is the difference between K1 and K2? Basically, K1 is produced by plants and is used by the human body for clotting factors. That being said though, human beings cannot produce K2 from consuming K1: only herbivores can do that. Vitamin K2 is what we call an "Activator" vitamin meaning that it stimulates the production and activity of osteocalcin - a protein produced by bone cells that directs calcium, to where it is supposed to go....i.e. into your bones, and NOT into your arteries. (That's why at our stores, you will find Vitamin K2 as the bridge between the vitamin and calcium/mineral sections.)

Why is it being called the "lost" or "miracle" vitamin? The reason for this is simple. As mentioned, only herbivores convert Vitamin K1 into K2 through the consumption of grasses and greens. We get the K2 by consuming their organ meats and other cuts, or their raw milk products. However, when we started industrializing meat production and began feeding cows, goats and other livestock GRAINS instead of GREENS, their production of K2 went down to nothing and we stopped getting this vital nutrient. This may be partly why in the last 100 years or so we have seen a sharp rise in instances of osteoporosis, tooth decay, heart disease and other illnesses that require minerals to go where they are supposed to deposit via osteocalcin.

Other rich dietary sources of K2 include the soy ferment called natto, as well as certain cheeses, such as brie and gouda, or particular vegetable ferments with the right K2 producing bacteria. But if your consumption of these is not regular, it is important to supplement.

When supplementing, the average capsule of Vitamin K2, such as that from Natural Factors, will contain 60 to 120mcg of K2. Even if you take a multivitamin, chances are your mix doesn't contain this fat-soluble vitamin. Supplementation can be especially important if you are vegetarian. Since it is fat-soluble, to enhance absorption of K2 choosing a supplement in an oil base such as coconut is the way to go.

Note: For an excellent thorough explanation of Vitamin K's forms, and how this supplement can benefit you, read Dr. Kate Rheaume-Bleue's book: Vitamin K2 and the Calcium Paradox: How a Little-Known Vitamin Could Save Your Life.

CALCIUM-MAGNESIUM:

Naturally, Vitamin K2 should be followed by the bone builders and these two minerals are really the stars. Though calcium is made popular these days for its role in bone-building, there are two things about this that are important to note. Firstly, while calcium's main functions are to provide nutritive support for bones and teeth, it is also essential for functions including blood clotting, nerve conduction, muscle contraction and movement, enzymatic regulation and cell membrane permeability. And secondly, with regards to bone building, calcium is not the only nutrient required to lay down new bone mass. In fact, burgeoning research on the subject shows that magnesium, Vitamin D and at least 16 other minerals and vitamins are involved in the process. Many of them may be just as, or more important than the higher-profile calcium.

Main dietary sources of calcium include seeds, nuts, leafy green vegetables, seafood and of course, milk and some other dairy products. Yet regarding dairy protein, if you are one of the many who are allergic or intolerant to any of its forms, the inflammation and acidity that accompany the immune responses to it are definitely not worth the calcium content. Especially since the body often buffers the acid by breaking down bone mass to release alkaline minerals...very counterproductive!

In supplements, calcium is usually bound to some form of organic compound forming a salt, each providing varying degrees of absorption. In drug stores, the cheaper big brand names will contain

calcium carbonate, usually from limestone. This form, however, is very difficult for the body to break down, absorb and utilize, and often does not contain the added minerals or vitamin D required for maximal use by the body. Probably the most viable forms are Calcium citrate for general supplemental use, or if you are specifically trying to build bone mass, MCHA (Microcrystalline Hydroxyapatite), or Coral Calcium...but we will get into this in a moment.

Firstly we have to discuss the importance of the presence of magnesium in your calcium supplement. Where calcium stimulates and contracts the muscles, magnesium is used to relax them and is further needed for cellular metabolism, the production of energy through assistance of enzyme activity, the maintenance of muscle tone in the heart, and controlling blood pressure, as well as hundreds of other functions. Magnesium is used together with Vitamin B6 to prevent kidney stones, as well as being used for depression, dizziness, muscle twitching and PMS. In addition to all of these functions, magnesium is essential for the parathyroid in its activation of Vitamin D3. On a muscular-skeletal level, magnesium is required to antagonize the contracting effect of calcium and keep our blood pumping. And magnesium is also required for the absorption of calcium in the first place, as we will see. Due to Magnesium's long list of critical functions It is recommended that you choose a Cal-Mag supplement which contains at least 2 parts of Magnesium for every 3 of calcium...or better yet, in a 1:1 ratio.

As mentioned, Vitamin D3 is also necessary for the absorption and utilization of calcium, among many other valuable functions in the body, including immune function, mood stabilization, proper endocrine system health, and so forth. Vitamin D actually stimulates the intestinal absorption of calcium through a very distinct mechanism. According to R.W. Wasserman in the November 2004 issue of The American Society for Nutritional Sciences, there are two methods of intestinal calcium absorption, and they are cited as being "a saturable active transport process and a nonsaturable passive diffusion process." Though it is generally agreed upon by most nutritional schools that the passive diffusion process occurs independent of Vitamin D, it is still essential for the active transport process. After Vitamin D3 has been converted to its active hormonal form (1,25 dihydroxcholecalciferol), it stimulates the synthesis of calcium epithelial channels and plasma membrane calcium pumps, inducing the formation of calbindins – proteins that bind with calcium and mediate its transport across the intestinal absorptive cells.

So how can we pick a good calcium supplement, given the dizzying array of options on the market today? As mentioned above, there are a number of forms of calcium, some of which are better for assimilation than others. I have found great benefit from two types of calcium in particular, but also made sure that the formulas I choose contain the necessary magnesium and Vitamin D as well. Look for products that contain citrate forms of calcium-magnesium in 1:1 equal ratios, as well as other minerals that assist with bone-building, such as manganese, potassium, zinc, and silicon.

Another product that is not a citrate but has shown some incredible results in the realm of bone-building and other general uses for calcium-magnesium is Coral Calcium. Most people think that if they purchase a product made from coral, they are committing an environmental injustice because of the highly sensitive eco-systems that thrive in ocean coral, the rapidly diminishing presence of coral in our oceans, and the concern of consuming ocean contaminants. But these concerns do not apply to fossilized coral. Obtaining it does minimal environmental damage and leaves it free of heavy metals like mercury. It contains 73 naturally-occurring trace minerals to help lay down bone mass. Look for formulas which contain added magnesium citrate to provide at least a 3:2 ratio of Calcium to Magnesium and additional Vitamin D.

THE OTHER MINERALS:

While each mineral deserves its individual day in the sun, that would leave us with a book of at least a hundred pages. For the sake of your time, we'll look at the rest of the macro and micro minerals in a surveying manner, citing what they are good for and how to choose your supplement of them. That being said, I don't necessarily recommend taking all of the individual minerals (because that can be achieved by taking a multimineral, or in some cases, a multivitamin as well). However, some people have a higher requirement for specific minerals due to outright deficiencies and as such, need to know how to pick the best form!

For everyone else, minerals in general are scarce in our diets, even if you eat healthy and one-hundred-percent organic. Why? Because while vitamins are produced by plants, minerals only come from the

content found in the soil. Since our soil is grossly depleted by agribusiness practices, we are very likely to benefit from a supplement.

Like all of your nutrients, minerals are too important to leave to chance...but this doesn't mean you have to take a ton of pills. A good multivitamin-mineral, may be adequate, depending on your situation, but don't forget your trace minerals. Trace mineral drops are great to add to water and an easy way to boost your content daily. It is the broad-spectrum trace mineral content that makes coral calcium desirable!

Mineral	Best Form	Uses	Notes
Calcium (M)	Citrate or Coral	Bone density, blood clotting, muscle contraction, nerve transmission	Should be consumed with Vitamin K2, D3 and magnesium. Competes with iron for absorption.
Chloride (M)	Betaine HCL	Hydrochloric Acid, digestion, liver detox	Can exacerbate some cases of acid reflux
Magnesium (M)	Bisglycinate, Amino Acid Chelate, Citrate	Muscle and brain relaxant, hundreds of enzyme reactions, cardiovascular health	May loosen stools if taken in citrate form. Oxide is only taken as a laxative.
Potassium (M)	Citrate, Amino acid chelate	Electrolyte, conducts electricity in the body, cellular integrity, fluids	Shouldn't be taken by those on some blood-pressure meds. Consult a doctor.
Silicon (Silica) (M)	Bamboo-sourced, Horsetail	Tissue strength and stability for bones, hair, skin, nails, tendons etc	
Sodium (M)	Sea salt	Fluids, conducts electricity, pH balance	Diet is usually sufficient
Sulfur (M)	MSM	Collagen formation, hair, skin and nails, brain function	
Boron (t)	Citrate	Healthy bones, pH balance	
Chromium (t)	Picolinate	Blood sugar balancing, insulin function, regulation of cholesterol levels	
Cobalt (t)	Trace mineral drops	Helps B12 regulate health of red blood cells	Unattached cobalt cannot be utilized by the body so it is best consumed in drops or a

			colloidal solution.
Copper (t)	Citrate, Amino Acid Chelate	Collagen and hemoglobin manufacture, red blood cell oxygenation	Kept in balance by zinc. Combined sources should never exceed 3mg/day
Iodine (t)	Food-based (ie. Kelp, seaweeds)	Thyroid function, metabolism, energy	Deficiency test should be administered prior to use of concentrated iodine supplements.
Iron	Ferrous Bisglycinate	Hemoglobin manufacture, immune health, anemia	Can be toxic when taken in high doses; can constipate depending on form; should not be taken with calcium; should be consumed with folate, Vitamin C, B12 and B6 for optimum results.
Lithium (t)	Orotate	Mood, Bipolar disorder, sleep	Difficult to purchase in most countries
Manganese (t)	Amino Acid Chelate	Supports enzyme functions	
Molybdenum (t)	Amino Acid Chelate	Helps copper to properly utilize iron; detoxes sulfites	
Selenium	Selenomethionine	Essential for thyroid function and liver detox, anti-oxidant, protection from free radical damage	Upper daily limits should not be exceeded from all sources
Strontium	Citrate	Cellular structure; prevents tooth decay and soft bones.	
Vanadium	Citrate	Often found with chromium in combination; aids in treating diabetes and metabolic syndromes, exhaustion	
Zinc	Picolinate	Vital for healthy tissues, growth, development and a strong immune system; maintains prostate health in men.	Should not exceed 50mg per day from all sources.

DO I NEED A MULTIVITAMIN?

Not necessarily, but everyone may intend something different with the word “need”. If what you have in mind is living well, and avoiding degenerative disease, a better question is “Will I benefit from taking one? To this the answer is extremely likely “Yes!”

For most people their diets simply do not meet their nutritional demand and a multivitamin is a great way of getting everything you need in one place. Bear in mind though that most multis will not contain significant enough amounts of the macro minerals like calcium and magnesium because their molecular structure is so large that you would either be left choking down a golf ball every morning, or you have to take 5 to 6 capsules a day, which some formulations suggest.

When choosing a multi, the formulation quality is very important. It is easy to get too little of many nutrients if all you rely on is a low-dose commercial multivitamin. You don't want to be buying one of those one-a-day multivitamins that you can find at any box store.

Needless to say, it is much better for absorption and utilization of the nutrients, if you go with a product that offers lower dosages more frequently.

The body is a complex organism and it utilizes the ingredients in a multivitamin in different ways and at different rates. For example, if you were to take the megadose of water-soluble B Vitamins or Vitamin C in one daily multi, the portion of it that does not make it into your cells will be largely flushed out in the urine. This means that as your day gets busier, you are running largely on empty for those valuable B Vitamins that help support your nerves. Another common addition to some multivitamins is the incredible anti-oxidant, Alpha Lipoic Acid. It has a half-life in the body of only 22 minutes!

The other thing to remember about choosing your multi is this: Just because you are a 50 year old woman or man, doesn't necessarily mean that a Plus 50 multivitamin is right for you. It is important to look past the label when choosing gender- or age-specific products. Often, the promises of the product are more an issue of marketing and less an issue of nutritional demographics. In mens' complexes, there will often be higher amounts of zinc, no iron and herbal complexes that are geared towards

protecting the prostate. The same thing applies to womens' multivitamins that include high dosages of iron (which can be hard on the stomach) and herbal complexes specific to regulating PMS or symptoms of menopause. Bear in mind, however, that if you look closely, these herbal concoctions are usually far from therapeutic dosages.

If you are looking for an herbal product for hormone balancing, your multivitamin will be unlikely to contain proper amounts for desired results that can lead to disappointment. However, they can be beneficial for people who just don't want to take a lot of supplements.

Note: There are a few individuals who can't tolerate a multivitamin, and take their vitamins and minerals in separate complexes.

ESSENTIAL FATS



Essential fatty acids are called essential for a reason. Our body cannot manufacture them in large enough quantities to satisfy our nutritional needs. They are classified as polyunsaturated fats, but are commonly known as Omega 3 (Alpha-Linolenic Acid[ALA], Eicosapentaenoic Acid[EPA], Docosahexaenoic Acid[DHA]) and Omega 6 (preferably the Gamma-Linolenic Acid [GLA] form). Oftentimes an essential fatty acid formula will include Omega 9 (Oleic Acid), but as it is readily available in the diet through the use of raw oils (olive and grapeseed especially) it is not as important to have a formula that contains it, as long as you are getting it through your food.

You've probably heard a lot about Omega 3 fatty acids in the last few years, but just like anything, not all Omega 3s are created equal. Firstly, food sources of Omega 3s include green leafy vegetables, canola oil, flaxseed oil, soy products, some nuts, and especially fish. Many very popular products provide

Omega 3s from plant sources such as flax. If you are athletic you may find performance enhancements from consuming a primarily ALA-dense supplement such as Udo's 3-6-9 Oil as it readily converts into useable energy.

However, this is not the most effective way of obtaining critical essential fatty acids. Plant sources of Omega 3s provide the body with a form of omega 3 called Alpha Linolenic Acid. ALA must be converted several times in your system enroute to their destination forms called EPA and DHA, which exert the critical anti-inflammatory benefits that people associate with omega 3s. Compared to other supplements on the market, the levels of EPA and DHA in plant oils are likely insufficient.

Fish is the true superstar when it comes to supplying these fatty acids, especially cold water fish such as sardines and anchovies, as these sources are exceptionally rich in the increasingly important EPA and DHA. These Omega 3s are imperative for healthy immune and endocrine function, healthy elimination, strong metabolism and gene expression, good cognitive function and memory retention, as well as healthy joints and connective tissue. In the past and even today, many doctors recommend salmon oil as a suitable supplement; however, again, reading your labels becomes increasingly important. For a quick comparison, grab a bottle of salmon oil capsules and a bottle of fish oil derived from sardines, anchovies or cod and you will quickly see that the latter is significantly higher in EPA and DHA for taking the same amount of capsules or liquid as salmon oil. And most often, there is little to no price difference, so sardines and anchovies or herring are the way to go.



Many clients ask me why they just can't eat fish and get all of the Omega 3s they need. This is because you would have to eat a fair amount of fish weekly, which is possible, but frankly, that just isn't as safe as it used to be. Heavy metals contaminate our oceans at rates never before seen and these dangerous metals such as mercury can accumulate in larger fish like salmon or tuna. When we consume them, we consume the heavy metals too which,

over time, can lead to all sorts of health problems. It is best to keep fish consumption to a maximum of three times per week and to supplement with molecularly distilled fish oil. This means that at the level of a molecule, all toxins and heavy metals have been removed from the product making it safer to consume than a fish fillet!

This is not even to mention the fact that Omega 3 fatty acids are highly unstable and can degrade very easily when near heat sources. Most of us cook our fish, outside of consuming sushi and sashimi, so note that the valuable essential fats in our salmon or our herring can be altered if we fry or bake them with other oils.

Omega 6 fatty acids, in the Linoleic Acid (LA) form, proliferate in our commercial food supply. They are found in most vegetable oils, cereal grains, poultry, eggs, nuts, and avocados. So if dietary consumption is varied and sufficient it may not always be important to find a product that includes Omega 6s with an Omega 3 supplement. Remember, however, all Omega 6s are not the same.

What is important to note about Omega 6s is that virtually all dietary sources of this fat provide the body only with Linoleic Acid. An excess of this form of fat can increase inflammation in the body via Prostaglandin E2. Yet, consuming omega 6 oils in a pre-converted form called GLA makes this much less likely. The body will convert Linoleic Acid to Gamma-Linolenic Acid (GLA) on its own through the D6D enzyme, but a deficiency can occur when this conversion becomes inefficient for reasons of age, or dietary deficiencies.

Thus, it is important when assessing a supplement containing Omega 6 fats to insure that it contains a pre-formed source of GLA, such as borage oil, evening primrose oil, or blackcurrant oil, which all provide significant quantities upfront.

Taking an Omega 3 supplement that includes GLA from one of these sources is of greater benefit than taking either fat alone, because the combination doubles-up on the anti-inflammatory benefits. An enzyme that would otherwise act to create inflammatory prostaglandin E2 has a preference for Omega 3. Because of this preference, the GLA is free to take an alternative route to become anti-inflammatory

prostaglandin E1. Hence, when we consume Omega 3s and GLA together, this enzyme gives preference to anti-inflammatory chemical pathways and serves to decrease overall inflammation in the body. This is important because excess inflammation is one of the major contributors to most modern degenerative diseases including arthritis, colitis, respiratory conditions, bowel diseases, heart disease and so forth.

PROBIOTICS:

These little bacteria helpers have been receiving a lot of attention in the media lately, and rightfully so. Without a gutful of these critters, we would quickly perish. Probiotics help us digest our food and obtain nutrients from it; they modulate our immune system and help prevent food sensitivities, thereby controlling inflammation in the body; they regulate waste disposal; and they keep bad bacteria and yeast at bay. The list could literally go on and on for pages about what these resilient bacteria do for us daily.

But why do we need to supplement with them? Simply put, our diets are far too deficient in fermented foods and the proper bacteria ratios to keep up with the amount of probiotic loss we endure due to antibiotic overconsumption, stress, poor diet and the proliferation of yeast in the gut. Supplementation of probiotics also ensures a focused delivery of the most imperative bacterial strains in a form that is readily available.

However, our individual probiotic population is as unique as our fingerprint, and due to this individuality, and to dysbiosis (proliferation of bad bacteria), not all good probiotics will produce the same degree of benefit in every body.

When choosing a probiotic, it is very important to read the ingredients. There are many products out there that have confusing labels. The two strains that have rightfully received the most attention are Lactobacilli acidophilus and Bifidobacterium bifidum. Acidophilus is the most prominent bacteria in your upper or small intestine, or at least, it should be. Bifidum is most commonly found in the large intestine and is essential for colon health and proper elimination. If you look closely at the labels on products in a

health food store, you will find that often, probiotics that are marketed as *Acidophilus* and *Bifidum* supplements, can actually contain significant amounts of less vital bacteria and minimal amounts of these two essentials. It is very important when choosing a general probiotic to make sure that these two strains are present in the highest doses.

Other strains of note include *Lactobacilli rhamnosus*, *Lactobacilli plantarum*, *Bifidobacterium longum*, *Bifidobacterium Lactis* (particularly effective as an anti-inflammatory) and FOS (frutoooligosaccharides), but not all of these are required to maintain good gut health. What is more important is the delivery system by which the probiotics bypass your stomach acid and make it to your intestines. There has been a lot made of enteric coating, aqueous coatings and acid-resistant strains of bacteria. For the most part, if your probiotic does not have one of those three delivery mechanisms, chances are that most of the bacteria is not making it to your gut alive.

[Note: Recently it has been discovered that even dead probiotics provide a benefit, because many of the anti-inflammatory effects they provide actually occur via our guts' recognition of what are called cell-surface markers, present on the outer cell walls of the probiotic bacteria.]

I have many clients ask me if eating commercial yogurt products supplies them with enough bacteria. By my estimates, the answer to that is no. Firstly, most commercial yogurts contain too many added sugars that help proliferate yeast in the body. This can be counter-productive. If there are no added sugars, this often means that harmful chemical sweeteners such as aspartame and sucralose have been added instead – substances that studies have shown not only negatively affect human cells, but also contribute to intestinal probiotic loss. Check your labels! Also, these yogurts tend to contain the cheapest strains of bacteria available that are often not the most essential and/or are sourced from animals. If that wasn't enough, most commercial yogurts are not organic, meaning that a whole slough of hormones and antibiotics can be present in your breakfast – hardly, an appetizing thought! Taking a simple capsule daily is the most efficient and convenient option available. If you are going to stick with yogurt, make sure it is plain- not flavoured- and organic.

Nutritional Support:

PROTEIN

Proteins are macromolecules made up of amino acids that are linked together by peptide bonds. Amino acids are largely comprised of carbon, hydrogen, oxygen and nitrogen in various combinations. Amino acids are the reason we consume proteins as they are absolutely critical to sustaining life and control many functions related to metabolism (our body's capacity for energy).

Twenty-one amino acids are required for the human diet and are remarkably encoded by the universal genetic code. As amino acids are highly versatile and can be combined to infinitum, many of these 20 can actually be created from compounds in the human body. These are the non-essential amino acids and are comprised of arginine, alanine, asparagine, aspartic acid, cysteine, glutamine, glutamic acid, glycine, proline, serine, and tyrosine. Historically speaking, asparagine was the first amino acid discovered in 1806 from an isolated compound in asparagus (hence the name!).

Essential amino acids are those that cannot be created from other compounds in the human body and so must be obtained from the food supply. Complete proteins are those that contain all of the essential amino acids, which include leucine, isoleucine, valine, lysine, threonine, tryptophan, methionine, phenylalanine and histidine.

Why do we need it? As mentioned, protein is critical for sustaining life. After water, protein is the most abundant molecule in the body as it is found in all cells and is essential for the structure of the body, including the muscles, hair, skin, nails and body organs. They are even found at the level of the membrane in the form of glycoproteins (amino acid chains that contain saccharide polymers- ie. Sugars). We also use proteins to form blood cells, hormones and enzymes making them critical to the circulatory, endocrine and digestive systems. Without proteins, we could not stand up, move, breathe, think, or produce energy. In short, we could not live.

There are many tricks for picking the proper protein sources dietarily, but sometimes we cannot meet our protein needs through food alone, or we wish to diversify our protein source base through the use of supplements.

WHEY:

There is no “whey” you haven’t heard about this protein source as it is all over health food stores and sports supplement retailers. Often thought to be “just a bodybuilding” product, whey actually offers a healthy alternative to meat or grain sources of protein. Whey is a mixture of globular proteins isolated from the liquid that remains after milk has been curdled and strained for making cheese. Globular protein refers to the chemical structure of a protein and the fact that it is more or less soluble in aqueous solutions. Unlike the other major protein family (fibrous), globular proteins from whey can act enzymatically (thereby catalyzing organic reactions in an organism), hormonally (thereby regulating normal biological processes), transportationally (thereby assisting other molecules across the cell membrane), infrastructurally (thereby stockpiling stores of usable amino acids and supplying raw materials for vital functions such as hemoglobin), and immunologically, (playing a direct role in antibody formation).

A lot of people are confused when it comes to figuring out which whey to purchase – Isolate vs. Concentrate. When whey is first removed from processing, it still contains the lactose (sugar) and fat. That’s why whey is then filtered and processed: to remove most of the lactose and fat. If you’ve ever heard of microfiltration or “ion exchange,” those are simply methods of separating the fat and lactose from the protein. The end result is a more concentrated protein – either concentrate or isolate (which is what you want).

The primary difference between isolate and concentrate is that the isolate is more pure. In other words, isolate contains more protein with less fat and lactose per serving. Based on whose figures you go by, whey isolate usually contains between 90-100% protein while whey concentrate has a protein ratio of 70-85%. On the other hand the Globular proteins in whey protein concentrate are less effected in

processing, and therefore remain in a more immune-active state. Whichever one you decide to go with, make sure you pick a clean product, free of nasty ingredients like artificial sweeteners.

HEMP

Perhaps one of the greatest food all-stars, Hemp has been used for centuries in everything from food, to textiles, paper, fabric, and fuel oil. Hemp foods come from the same plant species as marijuana (*Cannabis sativa* L.), but from a special variety that contains virtually no THC (tetrahydrocannabinol), the chemical that triggers marijuana's psychoactive effects. Hemp Protein Powder is produced when whole hemp seeds are cold-pressed to expel the oil, leaving behind a dry "cake," as opposed to "Hemp Bits" which are unprocessed and therefore less concentrated in protein. This cake is then milled at low temperatures to remove some of the fibre and produce a concentrated form of protein, providing essential fatty acids, antioxidants, vitamins, minerals, fibre, chlorophyll and a complete, balanced gluten-free source of the essential amino acids.

Many plant proteins are labeled "incomplete" proteins as a result of the low amounts of one or more of the nine essential amino acids. Truth be told, the "incomplete" label is somewhat misleading as all plant proteins do contain each of the essential amino acids. But in most cases, levels of one or more amino acid are insufficient for human needs. However, hemp protein supplies enough of each of the essential amino acids to contribute to the human body's requirements. In fact, an important aspect of hemp protein is that it is a quality source of the amino acids arginine and histidine, both of which are important for growth during childhood, and of the sulphur-containing amino acids methionine and cysteine, both of which are needed in the production of vital enzymes.

Just like whey protein, hemp protein also contains relatively high levels of the branched-chain amino acids,. These are crucial in the repair and growth of lean body mass, and make hemp protein a worthwhile post-workout shake candidate, particularly for vegetarians. Almost two-thirds of hemp protein is made up of edestin, a globulin protein found only in hemp seeds. This makes hemp the superior source for this protein in the plant kingdom. Edestin is a type of plant protein that is similar to protein

found in the human body, and thus is perfectly suited to aid in meeting the body's cellular needs such as DNA repair.

RICE

You may be used to thinking of rice as a carbohydrate, but like many other grains, it does have amino acids that make up proteins. In special processes, brown rice is treated with enzymes that cause separation between carbs and proteins. These enzymes are considered vegan and the processing of rice in this manner is considered a "raw food" technique. The result is usually made into rice protein powder, which may be flavored or not, and can be added to a variety of foods. The main appeal of rice protein is that most people digest it well, with very few allergic reactions to it. It is a complete protein, but is low in the essential amino acid isoleucine.

HERBS

Far from being able to administer a compendium in this short book, I actually want to talk less about what specific herbs do and more about how to choose the right form of a herb, depending on what it is.

So what are the forms of herbs available on the market and how do they differ?

LOOSE HERBS:

These are generally dried, cut herbs that are available in vacuum-sealed bags and can be made into teas or used to prepare tinctures at home. Good herbs to purchase in dry form are those used for large consumption, such as raspberry leaf in times of pregnancy. Roots need to be decocted (boiled for 20 minutes or more) whereas leaf varieties can be steeped like regular tea leaves. Consult a registered herbalist before mixing and matching herbs on your own.

TINCTURES:

Herbal tinctures are preparations made with alcohol or distilled water and dried or fresh herbs. A tincture is a preparation of these dried or fresh herbal liquids that are consumed in teas, water or juices. One teaspoon taken up to three times daily is often the dosage amounts for herbal tinctures, though this

obviously will vary from herb to herb. Before experimenting with tinctures it is important to understand the medicinal action of the herbs they contain. Pure grain alcohol is most often used to make herbal tinctures. Distilled water, white vinegar or glycerin can be used to make non-alcoholic tinctures. Herbal tinctures are essentially a different method of preserving or realizing the full-spectrum of medicinal properties in a herb, including those that are fat-soluble. They are significantly more potent than their loose herb counterparts.

DRIED HERBS IN A CAPSULE:

This is exactly what it sounds like. There are some herbs which are just too unpalatable to stomach making tea from and so manufacturers have put freeze-dried herbs inside capsules to avoid the taste and burden of needing to prepare a tea or decoction of them. As you are consuming the entire part of the herb (as opposed to straining it in the making of tea), this will affect the medicinal quality of the herb, requiring you to take less than if you were steeping it in hot water.

STANDARDIZED EXTRACTS:

A standardized extract is an herbal extract that has been processed so that it contains a specified amount of a certain compound, usually the one thought to be the active compound. The amount is then listed on the label with the intent to inform consumers that the product contains the listed amount of active compounds. This usually results in a more concentrated formula and is often the type of herb that is used for clinical studies. For example, Ginkgo biloba will almost always be found in its standardized form because that is the chemical makeup that has scientifically been shown to be effective for specific ailments.

Not all manufacturers standardize their products to the same compounds, and there have also been many instances in which more than one compound has been found to be active. For example, St. John's Wort products used to only be standardized to contain 0.3% of one of the components called hypericin; however, manufacturers are increasingly standardizing their products to 2 to 5% hyperforin as the research evolves.

Note that because these herbs have a different final form than their complete counterparts, they may not have the same overall properties that the whole herb is known for. Be sure to consult with a health-care practitioner to find out which is right for you..

PHYTOSOMES:

This is a relatively new part of the herbal market that is increasingly gaining accolades from the scientific world for its absorption rates and performance abilities. Phytosomes are produced via a patented process whereby the individual components of an herbal extract are bound to phosphatidylcholine - an emulsifying compound derived from soy. Phosphatidylcholine is one of the chief components of the membranes in our cells, and hence the cell membranes are more permeable to the Phytosome complex.

The Phytosome process has been applied to many popular herbal extracts including Ginkgo biloba, grape seed, hawthorn, milk thistle, green tea, and ginseng. The flavonoid and terpenoid components of these herb extracts lend themselves quite well for the direct binding to phosphatidylcholine... Specifically, the choline head of the phosphatidylcholine molecule binds to these compounds while the fat-soluble phosphatidyl portion comprising the body and tail then envelopes the choline-bound material. The result is a little micro sphere or cell is produced. The term "phyto" means plant while "some" means cell-like. What the Phytosome process produces is a little cell whereby the valuable components of the herbal extract are protected from destruction by digestive secretions and gut bacteria.

Natural Foods

As people continue to educate themselves about their health and nutrition, the natural health sphere continues to grow. Food sections of health food stores, which offer an array of natural, organic or superfood products, have expanded substantially in the last few years. Two items in particular always draw a lot of questions and so how to decide between them will be discussed below:

COCONUT OIL:

This incredible saturated fat has gotten a bad rap in the past as a palm oil, but a burgeoning wealth of research is proving that wrong. In fact, coconut oil contains saturated fats of the medium chain triglyceride variety which are being studied as of benefit to human immunity, HIV, cancer, Alzheimers disease and balancing cholesterol levels, among others. It also contains smaller amounts of the beneficial poly- and mono-unsaturated fats, Vitamin E and K1, Iron, and various polyphenols. It has been well-documented in its prevention of hair protein loss, cold and flu, fungal infections both internally and externally, as an effective skin moisturizer topically, and as it contains 50 percent lauric acid, it is also helpful for controlling high blood pressure and cholesterol.

So, we don't have an issue with the health benefits of coconut oil, but when we stand in front of a shelf that has dozens of varieties to choose from, how do we decide? The biggest things to look for with coconut oil are these: virgin, cold-pressed and organic.

Though there is no set standard yet for “virgin” coconut oil as there is in the olive oil industry, the term implies that the oil has been produced from fresh coconut meat or milk. Usually this involves removing the shell, washing the meat, and emulsifying the oil and water with some combination of enzymes, salt and electrolysis, depending on the brand. However, virgin coconut oils can also be of the boiled variety which kills the natural enzymes in the oil. This is why it is important to also look for “cold-pressed” on the label. This is usually a manual pressing and adds minimal heat to the process, keeping the natural fats intact. Lastly, organic is best for its lack of residual chemicals and because the processing of coconuts can be a highly industrial and contaminated process. If you opt for a certified organic label, you save yourself the chemicals that otherwise make the process of coconut oil cheaper and faster.

“Is it hydrogenated?” Hydrogenation is a chemical reaction induced by the presence of hydrogen and a catalyst element. It is unsafe and should be avoided, particularly due to its implications for heart disease. This is a common question about coconut oil because it is solid at room temperature. This is naturally-occurring and needn't alarm you. Coconut oil has a melting point of 24 degrees Celsius and will become liquid at temperatures over that.

SWEETENERS

Equally as difficult to choose from as the coconut section is that of the natural sweetener aisle. Row upon row of tasty concoctions from a variety of natural sources are just waiting to join your pantry crowd. But how do you know what is available, what variety to buy it in, and which one is best for you? Let's look at a few natural sweeteners that commonly grace the shelves of health food stores...

Stevia: Stevia leaves contain two "glycoside" molecules, steioside and rebaudioside, which are 300 times sweeter than table sugar, so you really need very little in your food or drinks. This fabulous green herb can be grown in most gardens and its leaves dried and crushed to be added to teas and other warm beverages. For more convenience and versatility, manufacturers have developed tinctures, tablets, powders and granules of stevia so that you're never without this handy, health-minded sweetener close at hand. One of the main reasons that people love stevia is that it has no rating on the glycemic index, which means that for those who are diabetic or insulin resistant, stevia can be a safe alternative to sugar and a much safer alternative to artificial sweeteners.

Stevia is available in alcohol tincture drops, or the glycerin variety (and just one or two is enough for most cups of coffee!), tablet form (occurring with chromium and other blood sugar balancers), powder (to use in baking and cooking recipes), and powder sachets, for convenience when out of the house. The only downside to many stevia products can be the aftertaste. This may take some getting used to, though not everyone is sensitive to it. For most, after a while without sugar, the aftertaste becomes an afterthought.

Xylitol: Another favorite for the diabetic or metabolic crowd (or those just wanted to watch their weight and sugar intake!) is xylitol. Xylitol is actually a sugar alcohol that registers at a mere 7 on the glycemic index, also making it safe for the above-mentioned conditions. Xylitol usually comes in a granulated, sugar-like form, which lends itself well to replacing the refined white stuff in all areas of food and beverage.

The other interesting thing about xylitol is the burgeoning amount of research linking this sugar replacement to dental health! It is non-fermentable, making it "tooth friendly", and can also rearrange

calcium cations to remineralize tooth enamel before dental caries are able to form!

The only drawback of xylitol is that you have to watch how much you consume. Higher quantities will loosen the stools, and in the extreme cause diarrhea. Despite this, as dental health becomes ever more apparent as a major contributor to health, xylitol can be a valuable addition to a healthy diet.

Honey: Ah, nature's sweet bee friend. Despite being quite high on the glycemic index, the health benefits of moderated amounts of organic honey are enough to fill a book in itself. You can usually find a variety of different honeys that have been created by bees that consume a specific crop of pollen, such as buckwheat, alfalfa, dandelion and manuka – each with its own unique medicinal properties.

The one I briefly want to focus on here is the last one: manuka honey. Particularly renowned for its antibacterial and antiviral properties, manuka comes in a dizzying spectrum of strengths - all of which seem to be unrelated to one another, and are brand-specific.

First of all, manuka honey is produced by bees that visit the manuka bush (*Leptospermum Scoparium*), which is found in New Zealand and some areas of Australia. Most reputable manuka brands will carry labels that signify some level of “UMF” which has been called the “unique manuka factor”, but is actually a trademarked term for the compound methylglyoxal. Now, this is nature's paradox, because if you look up virtually anything about methylglyoxal, it will tell you that it is a simple compound produced in living cells as a byproduct of glucose metabolism. It can actually damage proteins and increase tissue levels of free radicals. Yet, it can also be highly antibacterial and has been clinically shown to inhibit the growth of several strains of MRSA, bacteria causing peptic ulcers, GERD, IBS, the flu, colitis and sinus infections. The higher the UMF number, the more methylglyoxal the honey contains, and hence, the higher its antibacterial properties.

The only issue with manuka is for those who suffer from chronic inflammatory conditions. Such people may not react well to higher-than-normal tissue levels of UMF or methylglyoxal as a result of consuming manuka honey. In these cases, it is best to consult with your health care practitioner before you decide to incorporate manuka into your diet. Topical use, however, is generally considered to be safe.

Afterword

Though being far from completely comprehensive regarding every single item offered in a health food store, this guide has meant to serve as a beacon of light and understanding in the general sections of those stores – sections such as vitamins, minerals and nutritional support which most people will need to access regularly.

My goal and dream is to nutritionally educate and empower others to understand their bodies and health in a scientifically safe manner. I hope that this guide has been useful in helping you to understand not only what all of those shiny little bottles mean in your health food store, but how you can go about negotiating each section to find what you need for you and your family.

At the end of the day, health is a matter of choice, not chance and my hope is that you go into those health choices more informed and aware of your options and the research that supports them.

Yours in Health,

Nakita Valerio, B.A, CSN, BMSA Technician



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