

The Ultimate A-Z Guide

*to Bodybuilding
Supplements*

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Getting Started with Supplements



Working out in the gym is hard work – very hard work. And trying to stick to a strict nutrition regime for months on end is almost as difficult. So when you are trying to sculpt the body of your dreams, it makes sense to get every extra edge you can. The more leverage you can get, the better your results will be.

That's where supplements come in. We are lucky to live in an age where there is now a whole host of supplements that can help you build bigger muscles, faster. From creatine to BCAAs, and from whey protein to flaxseed oil, there are hundreds of different products you can use to enhance your workouts, improve your performance and perfect your body.

But with so many supplements to choose from, where do you start? Walking into a bodybuilding store can be a bewildering experience. That's where this guide comes in. Here you will find a complete A-Z guide to all of the most important bodybuilding supplements. Use this as a reference document to guide your choices and ensure that you get the most bang for your buck, and obtain the best results from every hour you put in at the gym.

Choose Quality, Safe Products



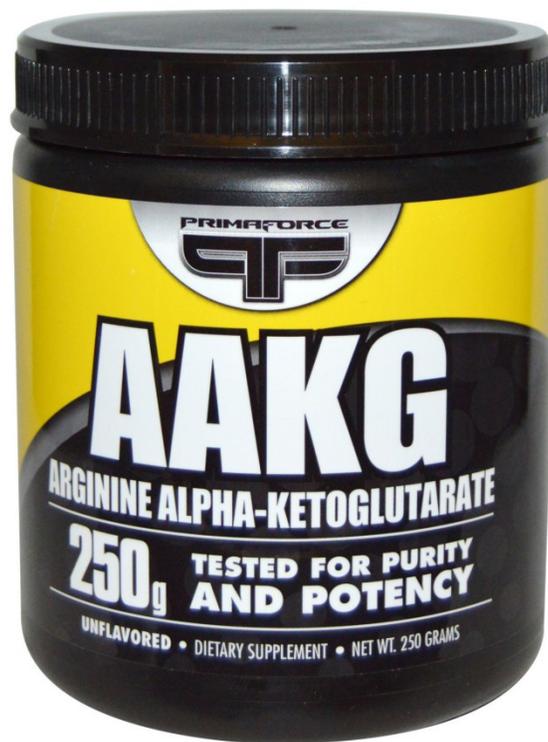
Sadly, it is undeniably true that there are many supplement manufacturers who are unscrupulous in taking advantage of bodybuilders. They will offer low-quality products that are bulked up with cheap, ineffective ingredients. That's why we recommend sticking with recognized brands that have a track record of delivering products that are worthy of their name.

You will also find that this report does not cover steroid stacks or any other extreme types of supplementation. Not only are many of these products often illegal, they can be dangerous if used incorrectly, and often have unpleasant side effects. The simple fact is that you don't need to go to such extremes to build a great body. With a good workout routine, a sensible diet and some of the safe supplements listed here, you can build an awesome body that your mates will envy, and the opposite sex will admire.

As with any medication, it is always a good idea to check with your doctor before taking any kind of supplement, especially if you have pre-existing medical conditions, or are advancing in years. This is especially true if you intend to combine various supplements in your nutrition program, which could possibly have unintended health consequences. But if used correctly, the better products on the market are generally fine to use.

So stick to safe, quality products and you will be sure of getting outstanding results.

AAKG



Arginine Alpha-ketoglutarate (AAKG and arginine for short) is one of the non-essential amino acids which plays a key role in making nitric oxide in the liver. Bodybuilders chose AAKG because it helps them to exercise longer whilst minimizing pain and stiffness. Another important benefit in the gym is the way it breaks down the by-products of muscle exercise, including ammonia. AAKG increases the muscle-building effects of every workout, stimulates protein synthesis and improves the size, strength and endurance of muscles.

Taking around 15 grams of this supplement daily increases your insulin level by up to 30 per cent, giving you greater strength gains and bigger muscles. Because AAKG increases nitric oxide production in blood vessels, it increases their diameter allowing better blood flow without raising your blood pressure. This results in more blood being supplied to the muscles, delivering more of the carbohydrates, proteins and other nutrients that they need to build muscle fiber.

You can get AAKG from red meat, but supplements provide a more concentrated source. Another benefit of using the supplement form is that the products are manufactured with a time release component so that the chemicals are released slowly over time.

Aspidosperma Quebracho Blanco Extract



Aspidosperma quebracho-blanco extract (typically called quebracho) is extracted from the bark of a tree that grows in the North of Argentina. It can be a useful aid in promoting fat loss, with yohimbe being the primary active ingredient.

This supplement works because yohimbe and similar alkaloids which are found in the bark can block receptors that inhibit fat loss. Scientific shows that the regular use of this supplement can result in a modest but useful increase in fat loss. A dosage of 50-250 milligrams is about right for most people, but this will vary depending on age and health, etc. This extract can also be found in weight loss drugs such as Hydroxycut Hardcore.

Some side effects have been observed from using this supplement, including arrhythmia, seizures and high blood pressure. So take care when selecting your product. Be especially careful if you are combining this with stimulants or antidepressant medications, due to the possible effect on blood pressure.

Beta Alanine



Fairly new to the supplement scene, Beta Alanine helps to reduce the symptoms of fatigue, allowing you to work out longer and harder. It is also a great supplement for older bodybuilders, as it can improve muscular endurance, which typically declines with age.

In the body, beta alanine is important in the production of carnosine, which is required in the muscle cells to control acidity internally. By reducing acid accumulation, it helps to slow down fatigue. Some studies show that beta alanine also enhances the effects of creatine, so you get a double benefit when you combine the two. Vegetarian bodybuilders can also benefit from using beta alanine, as they often have lower carnosine levels, which this supplement can help to fix.

Beta-Carotene



This supplement is one of the carotenoids, which are pigments that give vegetables their specific colors, and it is also a precursor of vitamin A. You will find carotenoids in vegetables such as carrots, pumpkins, squash, tomatoes and dark-green veggies. In supplement form, it is usually packaged in a synthetic oil-based form.

Beta-carotene and the other carotenoids are important because they provide nearly half of the body's Vitamin A. Also, because beta-carotene is an antioxidant, it helps eliminate free radicals in the body. This is important with respect to reducing the risk of developing various cancers and cardiovascular disease.

You can certainly get all the beta-carotene from a diet that is rich in the red-colored foods mentioned above. But if you feel that your diet may be deficient in this area for some reason, then beta-carotene supplementation is certainly a good option to consider.

Beta-ecdysterone

This supplement is a steroid which occurs naturally in various plants and insects. Its popularity stems from the fact that it is a safe and legal alternative to manufactured steroids. Beta-ecdysterone is known to promote rapid muscle growth, yet appears to have few or no negative side effects.

Various studies have shown that this supplement can have positive effect on muscle growth, although critics say that the benefits have been overstated. Nevertheless, if you are looking to increase muscle growth and sensibly want to avoid illegal steroids, beta-ecdysterone is an excellent choice of supplement.

In the race to build as much muscle as possible in the shortest possible time, bodybuilders often resort to dubious products such as steroids or human growth hormone supplements. While beta-ecdysterone may not produce quite same spectacular gains, it is a whole lot safer and a very great alternative for you to consider.



Branched-Chain Amino Acids



Branched-chain amino acids (BCAAs) are essential amino acids that we must obtain from our diet. They have a unique, branch-style molecular structure, which explains the name. Like other amino acids, they are the components used to build protein, and are important to muscle growth and exercise.

Branched-chain amino acid supplements are used by bodybuilders to improve exercise performance and reduce muscle breakdown. They help to reduce serotonin levels, thereby cancelling out fatigue and enhancing your performance during a workout. BCAAs also help with the repair of damaged muscles, and decrease muscle soreness.

You can buy specialist BCCA supplements, or you can get all the branched-chain amino acids you need by supplementing with products such as whey protein, which is rich in these acids. Either way, you will find that BCCAs are very helpful in helping you build muscle and improve endurance in the gym.

There are some side effects, including fatigue and some loss of co-ordination, but they appear to be safe for most people when used for up to six months at a time.

Caffeine



We all know we can get caffeine by consuming coffee, tea, chocolate and many other products. But it is also useful in supplement form to give your workouts a real kick. In addition to providing a quick energy boost, caffeine can boost brain function and reduce the risk of stroke and several kinds of cancer.

Other benefits of caffeine as a supplement include a lowering of perceived exertion and a reduction of muscle pain during exercise. Most experts agree that up to 300mg of caffeine per day is a safe dose, with the biggest dose taken immediately before exercise. On the downside, excessive caffeine consumption can lead to insomnia, anxiety, abdominal cramping and dehydration.

It is quite likely that you already get more than enough caffeine in your diet from coffee, tea, coke and other foods and drinks that you regularly consume. However, you may want to consider cutting back on these sources of caffeine, and drinking something like green tea (see below) instead. Then you can take a modest dose of caffeine in supplement form before a workout, to give yourself an energy boost and ensure that you work as hard as possible in the gym.

Carnitine



Carnitine and L-carnitine can be found in the body breaking down fat and turning it into energy. In addition, carnitine can increase nerve cell activity. This amino acid is naturally produced by the body in the liver and kidneys, and can also be obtained by eating poultry, fish or dairy products.

Carnitine supplements are usually promoted as weight-loss products, and indeed several studies have shown that this amino acid can help reduce fat, increase muscle mass and reduce fatigue, all of which help with weight loss. Other benefits are that carnitine can assist in protecting against heart disease, improve sexual health and slow down the aging process.

The Linus Pauling Institute reports that carnitine supplements are safe if taken in the range of 500-1000mg per day. Although generally safe, excessive use can lead to side effects such as vomiting, nausea, vomiting and abdominal cramps.

Casein Protein Powder

100% CASEIN	
Serving Size 1 Heaping Scoop (32g) Servings Per Container 56	
Amount Per Serving	
Calories 110	Calories from Fat 5
% Daily Value*	
Total Fat 0.5g	1%
Saturated Fat 0g	0%
Trans Fat 0g	
Cholesterol 10mg	3%
Sodium 230mg	10%
Total Carbohydrate 3g	1%
Dietary Fiber 1g	4%
Sugars 0g	
Protein 24g	
INGREDIENTS: Protein Blend (Micellar Casein, Calcium Caseinate), Natural and Artificial Flavors, Inulin, Salt, Lecithin, Gum Blend (Cellulose Gum, Xanthan Gum, Carrageenan), Sucralose, Aminogen®, Yellow #5.	
ALLERGEN INFORMATION: CONTAINS MILK AND SOY (LECITHIN) INGREDIENTS.	
Vitamin A 0%	Vitamin C 0%
Calcium 50%	Iron 2%
* Percent Daily Values are based on a 2,000 calorie diet. Your Daily Values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat. Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g
Calories per gram:	
Fat 9	Carbohydrate 4 Protein 4

Casein is one of the most popular protein supplements on the market, and with good reason. Like whey protein, casein is extracted from milk. In fact, casein represents around 80 per cent of the protein found in milk.

Bodybuilders like casein because it is a protein source that is broken down slowly in the body. This makes it ideal for the slow release of protein over time. Many people take casein last thing at night, to provide a steady flow of protein to the body during sleeping hours. This may prevent the body from going into catabolic mode and breaking down muscle, instead of building it.

Although generally safe, some people report allergies to casein, including stomach cramps, rashes, bloating and hives. Taking whey protein shakes first thing in the morning, and casein shakes last thing at night may be an excellent way of balancing your protein intake so that you get the best possible mix of fast-digesting and slow-digesting proteins in your diet.

Coenzyme Q10



Coenzyme Q10 is naturally found in every cell in the body, and plays a role in producing energy for cell growth and maintenance. It also has a secondary role as an antioxidant. This supplement is often used by bodybuilders to help in recovery from exercise. It is a useful general-purpose substance which promotes health and helps you to build muscle in the most effective way possible after your workouts.

Around 1,200mg per day is considered to be a safe dose, but you are advised to search for a reputable brand. There are no known serious side effects, but you may experience minor issues such as abdominal pain, loss of appetite, heartburn or rashes. As with all supplements, sensible dosage and usage is essential in order to get the best and most consistent results. Further research is being undertaken, and this supplement promises to be an important factor in building maximum muscle and maintain good overall health.

Expect to hear more about this substance over the next few years, as more research is done and further studies are conducted. It has the potential to become a supplement of increasing importance in the bodybuilding world.

Creatine

Naturally produced from amino acids in the kidney and liver, creatine is one of the most popular bodybuilding supplements on the market. When you work out hard in the gym, your natural supplies of creatine become depleted. That's where supplementation comes in. Taking a dose of creatine can boost those supplies and keep your body functioning at an optimal level. Creatine may help you complete more reps in each set, improve recovery times between sets, and make your muscles look bigger due to water intake.

The recommended dosage is no more than 20 grams per day, and the optimal way to consume this supplement is in four separate doses spread out throughout a 24-hour period. There are various forms of this supplement available, but creatine monohydrate is the most popular and the most effective in typical bodybuilding scenarios. Hydration is important, so keep your water levels topped up when using creatine.

Creatine is often promoted as a kind of wonder supplement, and huge quantities are sold every year. Although the claims may be a little exaggerated, there is no doubt that this is a very important substance to have in your supplement toolbox, and it can play a vital role in helping you get the muscle gains you are looking for.



Fish Oil



It is generally agreed that all of us need to keep our levels of omega-3 fatty acids topped up for good health, and fish oil is the simplest and most effective way to achieve this. Extracted from the tissues of fatty fish from cold waters – including cod liver, tuna and salmon – it has been shown to be helpful in increasing our levels of good HDL cholesterol, amongst many other benefits.

The benefits of fish oil have been known for many years in terms of promoting general health, but only now are we beginning to discover how important this is for bodybuilders in particular. This is a supplement that most bodybuilders should consider to be almost a dietary requirement.

Bodybuilders should take up to three grams per day of omega-3 fatty acids, and there are many supplements out there designed to help you achieve that goal. However, you should check the label carefully to ensure that it says 'omega-3 fatty acids' and not just 'fish oil.' This is definitely one product to keep on hand on a regular basis. Natural, safe and every effective, it is one of the best supplements around for people who want to build big muscles.

Folic Acid



Folic acid is important because it is vitamin B in water-soluble form, and plays a key role in helping the body to digest proteins and create new ones – as well as assisting in forming red blood cells and building new DNA. It is often found in compound vitamin B supplements, or in multi-vitamins.

Folic acid helps to maintain the health of your cardiovascular system, as well as being good for your mental health. Your daily dose should not exceed 1mg, as an excessive amount of folic acid can eventually lead to permanent nerve damage. Taking too much folic acid in supplement form can also lead to side effects such as skin reactions, stomach pains and disturbed sleep.

Although folic acid doesn't receive that much attention as a supplement, it really does play a key role in functions that are important to bodybuilders. Creating new proteins is what building muscle is all about, and folic acid is essential to that process. So make sure you get the right intake of folic acid so that you can fuel the building of new muscle tissue after your workouts.

Ginkgo Biloba



Derived from the leaves of the Ginkgo Biloba tree, this supplement is one of the most popular medicinal herbs, and is growing in popularity by the year. Usually offered in capsulated pill form, it works to improve blood flow and the delivery of oxygen. As a result, it is great for increasing endurance and reducing fatigue, enabling you to get more done in each workout.

It is important not to underestimate how critical this is to bodybuilding. We all know that much of the benefit obtained in a workout set comes from pushing yourself to the limit in the last one or two reps. This substance can help you sustain your efforts so that you can squeeze out just one more rep – and that last rep is the one that will help you really pack on the extra muscle you are looking for.

The recommended daily dose is one that is in the 40-80mg range, taken up to three times a day. Although it is generally considered to be safe, it should not be taken by people who suffer from seizure or clotting disorders.

Glucosamine

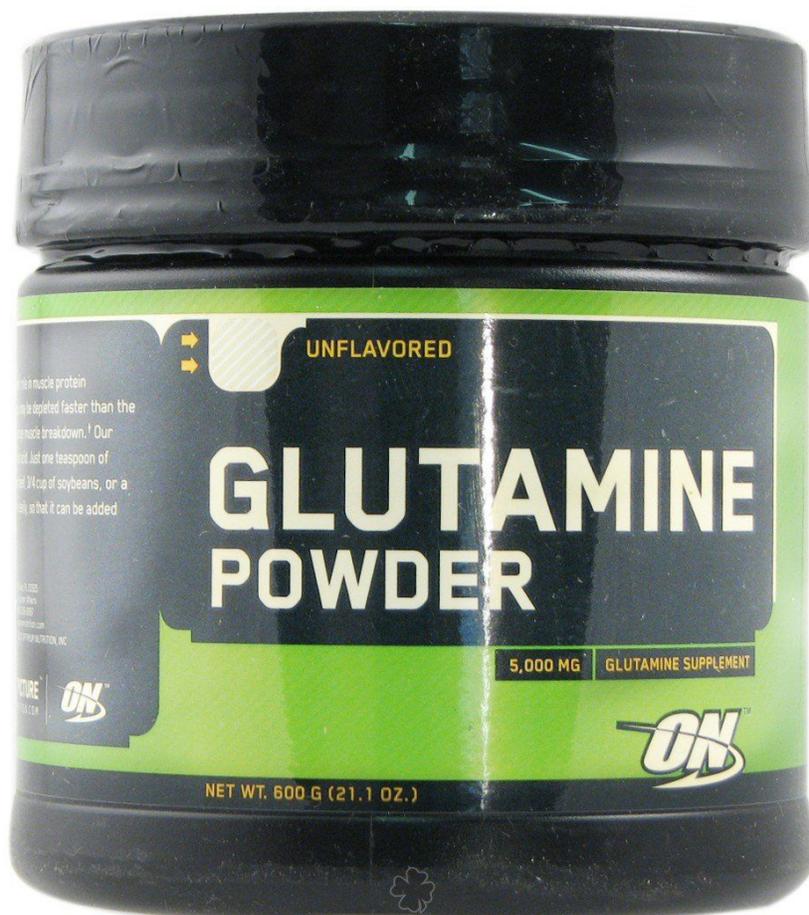


Glucosamine cannot be derived from food, so supplements are the only way to increase the supply of this chemical in your body. It is particularly useful for keeping joints healthy and making them stronger and more elastic. This supplement also plays a role in pain relief, and so may assist in dealing with muscle soreness and minor muscle tears and injuries.

You can take glucosamine in tablet, powder or capsule form. The maximum recommended dose is 1500mg per day, split into three separate doses. Because these supplements are derived from shellfish, they should not be taken by anyone with a shellfish allergy. People with diabetes should have their blood-sugar levels monitored when taking glucosamine.

Joint health is something that gets less attention than it deserves in the bodybuilding world. After all, working out is all about moving joints, and if you have problems in this area you simply will not be able to work out the affected body part. Taking a supplement like glucosamine can ensure that you maintain good joint health so that you can work out your entire body and achieve the ideal physique you are looking for.

Glutamine



Glutamine is the amino acid that is found most often in the human body, typically stored in the muscles and in the lungs. It plays a key role in many metabolic processes, and is especially important for carrying nitrogen throughout the body and delivering energy to many cells.

Because of this, supplementing your glutamine intake can speed up your post-exercise recover, and assist in the repair of injured tissue. More importantly, when you are exercising hard, your natural glutamine levels tend to fall, so taking this amino acid in supplement form can keep your body functioning optimally. With a higher level of glutamine in the cells, your body is able to synthesize more proteins to build bigger and stronger muscles.

Glutamine supplements are available in both capsule and powder form, but you should take no more than 40 grams per day. However, this supplement has been used for many years by bodybuilders with few side effects or other negative issues. Of course, you should always stay within the recommended dose to minimize the risk of negative effects.

Glycine Propionyl L-Carnitine



Known as GPLC for short, glycine propionyl l-carnitine is part of the carnitine family, and plays an important role in the formation of creatine. Acting as an antioxidant, it helps to deal with free radicals and provides protection against lipid peroxidation. It also helps in energy production and with the removal of waste products.

Although it has many medical benefits, GPLC is best known for the way it can stimulate muscle growth and allow increased exercise performance. Experts agree that GPLC increases the anaerobic threshold, holds carnitine in the muscles and increases the production of resting nitric oxide. This optimizes the delivery of oxygen and nutrients to the muscles both during and after workouts.

GPLC is gaining in popularity as a bodybuilding supplement, and it is easy to see why. It offers a number of key benefits that promote good health in general, and assist in the bodybuilding process in general. This is certainly a good product to consider, but be sure to use as directed on the product packaging.

Green Tea



Made from the leaves of the *Camellia sinensis* plant, green tea has been used for its medicinal benefits for thousands of years. Another antioxidant, green tea extract can also help you burn fat and lose weight. This is because it causes thermogenesis and increases fat oxidation. It also contains epigallocatechin gallate which is also believed to have a significant fat-burning effect.

Experts suggest that if you switch from drinking coffee with cream and sugar to drinking green tea instead, you could lose weight from the reduction in your calorie intake, combined with the other fat-burning effects described above. Although it is something of an acquired taste, once you get used to it you may find that you no longer crave coffee or conventional tea. Switching from coffee to green tea is undoubtedly a big step forward in improving your health. This is due to the accumulated benefits which you will acquire from consuming a healthier product every day for many years.

Green tea extract is considered to be a very safe supplement, but as with all things, excessive consumption should be avoided. Because green tea contains caffeine, high levels of consumption can cause insomnia and other side effects. However, because green tea extract has been used extensively in weight-loss products for many years, there is a great deal of data that supports claims that it is safe to use in moderation.

Hops Extract



Hops extract is often used in supplement form as a fat burner. Studies have shown that people supplementing their diet with hops extract can achieve greater weight loss than those who do not. In addition, this supplement can decrease bloating and water retention which can also assist in weight loss. Another benefit is that hops extract can improve the quality of your sleep, which aids in recovery and helps you get more from your workouts.

One way to take this supplement is by steeping the hops in boiling water. Alternatively, you can buy it in capsule form and take half a gram of dried extract three times a day. Liquid extracts are also available. Look for products that list isohumulones, as these are the active fat-burning component that make all the difference.

People tend to associate hops with beer, and are therefore rather surprised that hops extract can be a healthy product. However, the evidence is clear. Hops extract is a safe and useful substance that can deliver real fat-burning benefits, as well as aid in workout recovery.

Inula Racemosa



This herb delivers a triple-whammy benefit for bodybuilders, as it not only helps to enhance your cardiovascular system's performance, it also assists in fat loss and can lower cholesterol. Now that has to be a product that you must take seriously!

In terms of weight loss, this extract works because it contains alantolactone, which is known to increase sensitivity to insulin. This causes you to secrete less insulin following meals, and therefore less of your food gets converted into fat. The recommended dose is 20-100mg daily. No serious side effects are known.

We live in a world where we regularly consume too much sugary, fatty food, even when we are trying to eat the healthiest options. That's where supplements like inula racemosa come in. They help us to fight back by burning more fat naturally to restore a healthy balance in our bodies. Definitely one to try if weight loss is the biggest challenge you are facing.

Lycopene

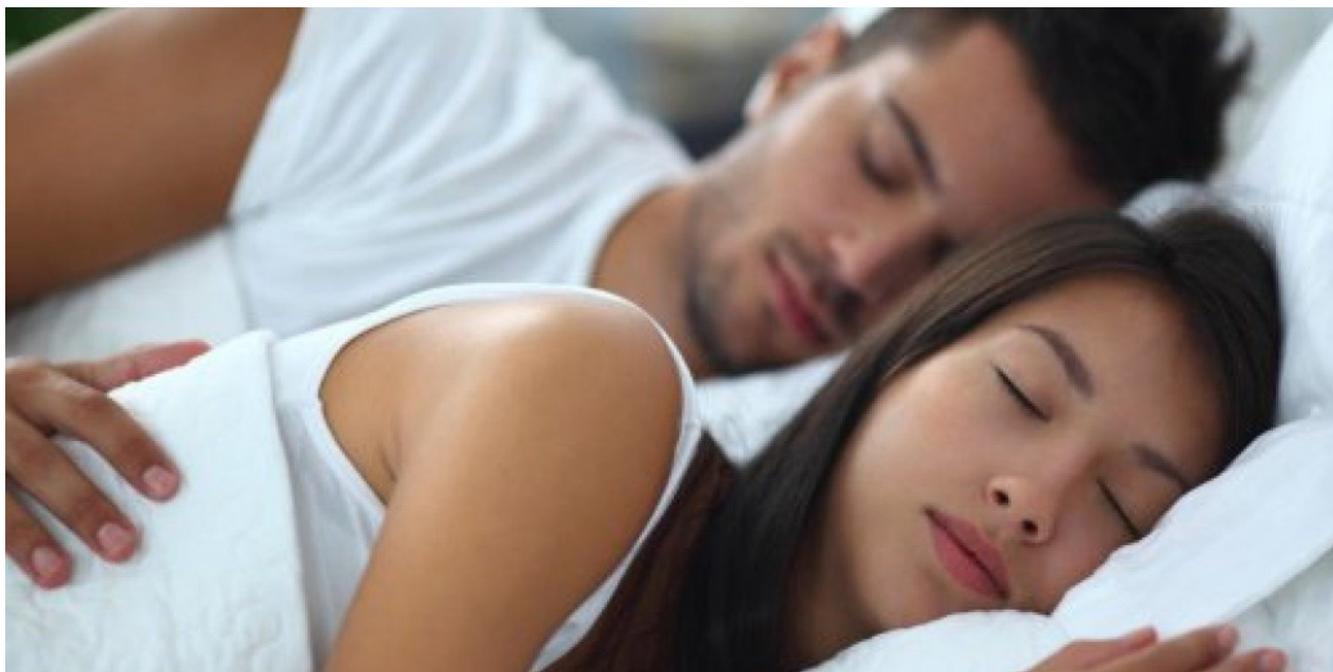


This bright-red carotene is the substance that turns tomatoes, carrots and watermelons red. It has antioxidant properties that are twice as powerful as beta-carotene, according to some studies. As a supplement, it is very useful in maintaining general health and fitness, and can be a very useful aid for bodybuilders and athletes.

This antioxidant effect helps the body in the fight to reduce the problem of free radicals, which bombard the body and cause damage that accumulates over time. As a result, lycopene is a great general health supplement which can make you feel fitter and help you get more done in the gym.

Although you can get this substance from the red foods mentioned above, you can also get it in supplement form. The suggested dose is 2 to 30mg for periods of up to six months. As with all supplements, you should stick to the recommended dose, taken at the recommended times.

Melatonin



An important hormone in our bodies, melatonin is important in determining night and day and regulating our natural sleep cycles. As an additional bonus, it can also help with your sex drive. Overall, it is a useful supplement both in the gym and in the bedroom.

Sleep is a factor that is often underestimated by bodybuilders. When you work out, your muscles cells incur many micro-tears. It is when these tears are repaired that your muscles grow and develop. So as much of this work occurs while you are asleep, quality sleep is essential to maintain good, regular sleep cycles.

Melatonin can help you achieve this. A dose of 3-5mg is effective yet stays within safe limits. But be aware that melatonin supplements can affect your alertness and slow your reflexes. Nevertheless, good sleep is a factor in bodybuilding that is often seriously underestimated, so this supplement can be very helpful in allowing you to perform at your peak.

Niacin



A form of Vitamin B3, niacin is found naturally in many foods, but is also readily available in supplement form. We all know that vitamins are essential for fueling our body processes. But did you know that due to modern farming techniques and food-processing methods, we often end up with a diet that is vitamin deficient?

That's why supplementing your vitamin supply is a good idea. Niacin is particularly important for bodybuilders, because it can help to lower LDL cholesterol, which is the bad type – whilst at the same time boosting HDL cholesterol, the good type.

Although consuming too much niacin or other vitamins could cause side effects, in reality you would have to consume an awful lot for this to be a serious problem. So as long as you don't go crazy with supplementation, some additional niacin is a clear positive that will help you maintain a health vitamin balance - week in, week out.

Oleoylethanolamide



A lipid that is naturally created in the digestive system, oleoylethanolamide can play a role in weight loss by helping you to feel fuller. It has the effect of shutting down the system that makes you feel hungry, so you can go through the day consuming fewer calories. It works by both ramping up fat burning and also decreasing fat storage. Research has shown that using this substance can result in a 15% reduction in food intake.

Although oleoylethanolamide is not essential to your body's operations, it can have a very useful positive effect. It is regarded as being safe to use, and as such there is no maximum recommended dose.

Fat loss is a major issue for many bodybuilders, and one of the main reasons for being overweight is simply that we cannot resist the hunger pangs. By helping to switch off this hunger mechanism, oleoylethanolamide can assist us to control the urge to overeat, and therefore keep our fat levels under better control.

Potassium



This mineral is essential to many key bodily functions, including the operation of the kidneys and heart. Although it is found naturally in foods such as bananas, avocados and nuts, it can also be obtained in supplement form.

If you think your diet may be deficient in potassium-rich foods, then you should certainly consider supplementation in order to keep the right chemical balance within your body. Research shows that a healthy potassium balance is also helpful in regulating the heart and maintaining normal blood pressure, both of which are important when you are putting your body under stress in the gym.

The suggested intake for adults is 4,700mg daily. If you eat more processed foods than whole, natural foods, you should consider potassium supplementation in order to maintain your health. You are unlikely to consume enough potassium to experience any problems from excessive use.

Selenium



This substance is important to health because it plays a fundamental role in strengthening the body's immune system. Selenium has the effect of acting with various proteins to create antioxidants that enhance health and reduce damage to the body. If you are deficient in selenium, you may feel weakness in the muscles, and may also experience fatigue.

Obviously, these are not good things to happen to bodybuilders, so selenium supplementation does have real value. Only a modest dose is required to maintain good health, and this product can generally be consumed safely within sensible limits. By restoring your energy and delivering more strength to your muscles, selenium helps you push yourself harder when you are at the gym.

Selenium is often found in compound products such as multi-vitamins. This is a great way to get the selenium you need every day, whilst also topping up with other essential vitamins, minerals and other key substances.

Sesamin



Sesamin is one of the fibrous substances known as a lignin. It works as an antioxidant, and has the effect of reducing 'bad' LDL cholesterol. Better still, it also works to stimulate weight loss. This is because it increases the activity of liver enzymes which break down fatty acids.

It gets better. Sesamin may also help to preserve lean muscle mass simultaneously with enhancing fat burning – the ideal combination of effects for most bodybuilders. What could be better than a product that helps you build muscle and also lose weight? It is no wonder that sesamin is beginning to attract so much attention in the world of bodybuilding.

There are many supplement brands of sesamin, which typically suggest a daily dose of 1000mg. Very few side effects have been noted over the years, and this supplement is generally considered to be safe to use for the majority of people. In a few cases, people have been found to be allergic to selenium, but these cases are rare and should not worry you unduly.

Taurine



This amino acid is not only a great antioxidant, it is also said to enhance athletic performance in the gym. Studies show that people who take taurine supplements regularly show a significant increase in VO2 max, which measures the maximum capacity of your body to use and transport oxygen. This is believed to be due to taurine's ability to act both as an antioxidant and to help protect your cells from damage.

Improving oxygen delivery to the muscles helps to reduce fatigue, fuels better work outs and allows you to get more done. Every muscle contraction is powered by oxygen, so getting it to the muscle cells quickly and efficiently is essential. Taurine can play a significant role in making this happen.

Taurine is generally considered to be safe for adults, when taken in doses within the recommended range. Excess taurine is usually excreted by the kidneys without any problems, so you should not have to worry about excess intake in normal usage. Definitely a useful supplement to add to your armory.

Tetradecylthioacetic Acid



This fatty acid – TTA for short - is not used as fuel within the body, but rather helps in managing how much fat is stored. This is achieved by the use of genes that oversee your metabolism, and regulating them as necessary.

Some early studies show that TTA burns fat from the body without the need for exercise, making it a dream supplement for many people. This effect is evident even in people who take no exercise whatsoever. If you take regular exercise, then the effect is compounded, so this is a great supplement for bodybuilders who really put themselves through it in the gym. TTA helps you to continue burning fat long after you have finished your workout.

Because it also helps to make you feel full more quickly, it also reduces hunger and therefore assists in reducing calorie intake. As a bonus, TTA has antioxidant, anti-inflammatory and immunity-enhancing properties, and may also lower bad cholesterol levels.

TTA is found in numerous fat-loss products. Studies suggest that is safe to use for most bodybuilders when taken in the recommended dose of once daily for seven days. Doses of up to 1000mg are acceptable.

Tribulus Terrestris



This herbal supplement is used in many products that are designed to deliver serious gains in strength and muscle performance. It has also been suggested that this substance can increase testosterone levels in men, leading to even better performance in the gym. However, the amount of research that has been done is limited, and it is true that further tests and studies are required before any significant conclusion can be reached. Certainly the exaggerated claims by many products which use tribulus terrestris should be treated with caution, and realistic expectations should be maintained in terms of predicted muscle growth and strength enhancement.

Nevertheless, this is a very promising option that should be considered if you need to achieve additional gains in your workouts.

Bodybuilders are recommended to take 85-250mg three times daily, and it is best to take this supplement with your meals. The research to date suggests that tribulus terrestris is safe when taken in moderate doses and used as directed. No significant side effects have been noted, but those competing in competitions should be aware that the use of tribulus terrestris could increase the urinary testosterone/epitestosterone (T/E) ratio, which could possibly result in a positive drug test.

Tyrosine



Tyrosine is another amino acid which is produced in the body from phenylalanine, as well as being obtained from food such as animal or plant protein. It is the powerhouse behind several critical neurotransmitters, including norepinephrine, serotonin, epinephrine and dopamine.

As a result, a deficiency in tyrosine can result in issues with alertness and performance, so supplementing can restore the natural balance. Another benefit of taking tyrosine is that this amino acid acts as an antidepressant, thereby enabling you to act at peak performance and burn more calories naturally throughout the day.

Bodybuilders are recommended to take 500-1000mg three times per day, timed so that you consume this dose just before your meals. Taking excessive doses could possibly lead to gastrointestinal issues such as nausea, vomiting and migraines, but these are generally not an issue for those who stick to the proper dosage. However, people who suffer from thyroid problems, depression or Parkinson's disease are advised not to use this particular supplement.

Vitamin A



This fat-soluble vitamin is essential to the correct functioning of our bodies, especially with respect to the eyes. In addition, vitamin A boosts the immune system and is very important in the maintenance of a healthy skin.

One of its key roles is to help the linings of the respiratory, intestinal and urinary tracts in good shape, each of which is important to bodybuilders. Some studies suggest that vitamin A also assists white blood cells in fighting infections.

Although vitamin A is readily available in supplement form, you should check the recommended dosage of 900 micrograms per day, and stay within safe limits. Excessive use can lead to liver problems and lower levels of bone density. As a result, some specialists suggest that the best way to supplement with vitamin A is to take beta-carotene supplements, which encourage the body to make its own vitamin A.

Vitamin D



This group of fat-soluble prohormones is introduced into your body through many dietary sources, but is also obtained directly from the sun. There are several forms of vitamin D, but the most important ones are : ergocalciferol (vitamin D2) and cholecalciferol (vitamin D3). Together, they work to help maintain some of your most important organ systems.

Vitamin D is important to maintaining strong bones because it increases the flow of calcium into the bloodstream. Other important benefits include greater longevity, lower risk of heart disease, lower blood pressure and reduced risk of illness. For bodybuilders, another important benefit of Vitamin D is its ability to help in reducing joint pain, making it very useful when you are performing aggressive workouts in the gym.

Although most people get enough vitamin D from exposure to sunlight, those living in colder climates are more vulnerable to deficiencies of this important substance. A suitable supplement can then be a great way of balancing your vitamin D levels in order to maintain optimal health.

Be wary of taking excessive doses, though, as these can lead to vitamin D toxicity as result of calcium building up in the blood. If this happens, you could experience symptoms such as nausea, reduced appetite, heart problems and even kidney stones.

Vitamin E



These fat-soluble compounds which all have antioxidant properties are found naturally in many foods, but can also be taken as a supplement. Vitamin E is important in promoting overall health throughout the body, and you should take care to ensure that optimal vitamin E levels are maintained.

In particular, this substance is one of the main antioxidants in the body, and is essential to help reduce the problem of free radicals, as these cause cell damage and accelerate the aging process. In addition, it helps in the oxidation of bad cholesterol and thereby helps to reduce the plaque buildup which can be a serious problem in your arterial walls. Some studies suggest that vitamin E is helpful in reducing the risk of heart disease and various cancers.

Vitamin E actually performs best in combination with other antioxidants, including selenium and vitamin C. So taking this substance in the form of a multi-vitamin can be an effective way of getting the vitamin E you need, and maximizing its positive effects within your body. The recommended daily dose is 15-20mg per day.

Whey Protein



Whey is the super supplement that powers bodybuilders all over the world, and with good reason. Derived from milk, whey protein is not only an excellent source of protein, it is also absorbed into the body very quickly. This means that whey protein shakes deliver maximum 'bang for your buck' in terms of helping your body build bigger and stronger muscles faster.

This substance is available in two main forms – whey protein isolate and whey protein concentrate. The isolate form is the purest, and if you are looking for maximum muscle gain, this is probably the way to go. Not only does it have 90 per cent more protein, it also has very little fat, lactose or cholesterol.

Whey protein is one of the richest sources of branched-chain amino acids, which we have already discussed as being important to muscle

growth. Research has also shown that the use of whey protein shakes can also jump start a diet. Because protein makes you feel full yet does not have many calories, consuming protein can give you a full feeling, which results in lower calorie consumption overall.

Taking a whey protein shake first thing in the morning, and another immediately before a workout, is a great way to give your body a head start on turning exercise into muscle. A post-workout shake can also be a great way to boost protein levels at a time when your body is working to recover from workout stresses.

Whey protein is one of the most widely-used supplements in the world, and as a result is one of the most studied. The evidence so far suggests that using whey protein is very safe for most people.

ZMA



This substance combines zinc and magnesium aspartate with vitamin B6, and has been shown to increase muscle strength noticeably in bodybuilders and athletes. It is designed to address the problem of zinc or magnesium deficiency, which can have negative effects within the body.

A lower than normal level of zinc can hamper the immune systems and reduce performance during exercise, as well as affecting protein synthesis and cell growth negatively. A shortage of magnesium can have a negative effect on no less than 300 metabolic reactions, and can result in reduced bone strength, poorer muscle contractions, poor sleep and insulin insensitivity. Vitamin B6 is required to help the body turn protein into energy, so a shortage can affect your energy levels.

ZMA solves all of these problems in one go in a handy supplement form. As well as fixing the issues noted above, research suggests that ZMA can also increase testosterone levels, which has clear benefits. Perhaps more important still, it may reduce catabolism, which means it prevents the body from breaking down muscle and converting it into the energy – thereby helping you to preserve the gains you have made in the gym.

This supplement is generally considered to be safe when taken at the recommended dosage levels. There are no known side effects, and it appears to be an effective supplement to add to your bodybuilding armory.

Making the Best Use of Supplements



Supplements certainly have a role to play in bodybuilding, but it is important to keep them in perspective. The majority of the gains you get in terms of improving your body come from hard work in the gym, combined with sensible nutrition and lifestyle. Supplements should be used to do just what their name says – supplement diet and exercise, not replace them. They can certainly accelerate your gains, but they are not magic cures.

Read the dosage and usage instructions carefully, and don't be tempted to take higher than the recommended dose, or to use the supplements more often than advised. Some bodybuilders get tempted to try lots of different products at once, and end up spending hundreds of dollars a month on products they don't really need.

Used sensibly, however, bodybuilding supplements can give you that extra 10-20% that makes all the difference in building your ideal body. Choose the products that are right for you with care, use them as directed and stick to quality products. If you remember those principles, supplements can certainly take you a long way towards building bigger muscles faster.