

SINEW NUTRITION
SOURCE OF STRENGTH



MASTERING PROTEIN
& **BODYBUILDING**

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Sinew Nutrition

by HealthGenie

Backdrop

Buying and using proteins is generally quite a simple process but most companies try to make it complicated, so that most people are unable to make their own informed choices. They try to confuse consumers in order to be able to charge extra on the brand value. This huge gap in the market, led us enter into the market with complete in-house manufacturing, with this book we are wanting to educate consumer and establishing ourselves as a **Transparent/Value For Money Brand**.

In the initial stages, when our manufacturing was contracted out, a lot of lots failed, due to inadequate protein content, nutritional facts, inconsistent flavors etc. This led to the pivot in our strategy to do complete in house manufacturing, to ensure that best quality ingredients, blend of flavors and correct nutritional fact and quality authentications are associated with each of our product batches, besides continual improvements.

Brand Proposition

- We believe that the experience of buying a product online should be fun, convenient & seamless. Our website, app, blog, should give an exceptional customer experience with the help of innovative technology.
- We believe that our customers have the right to demand an exceptional customer service experience that is above par and strive to exceed expectations " Customer Delight".
- We believe our customer relationship agents should be pampering in personality, professional & exceptional in their product knowledge "to build a Relationship (Loyal customer), not just a sale."

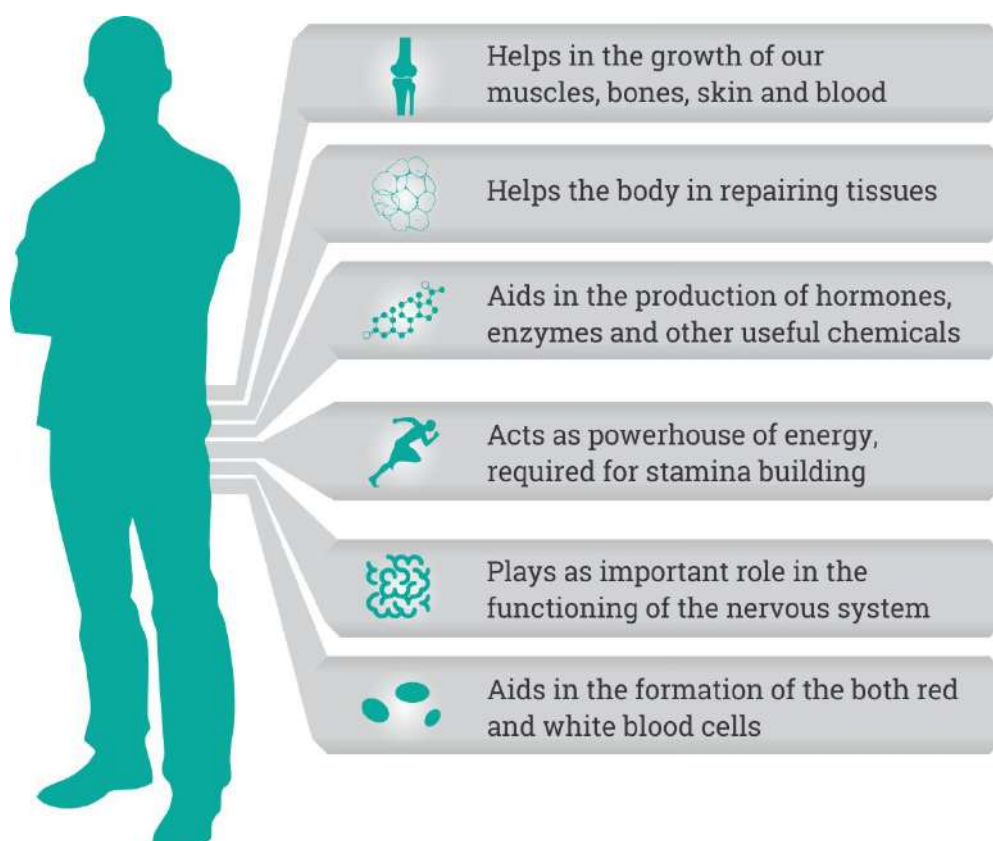
“How do we make such high quality products at such low prices? “

The answer is simply that, in spite of buying the best imported raw materials (from the same source as ON, Ultimate nutrition, Dymatize etc.), we are manufacturing in-house & doing strict quality testing and so we are able to produce a high quality product at the most cost efficient rate. The sales are also done directly to have the smallest supply chain management to avoid an additional cost centers.

To pass on the price benefits to all our customers, eventually our brand ambassadors, we refrain from investing large sums of money into marketing and branding activities. Minimal costs, great flavors and variety, post sale nutritional guidance and our dedicated team entail highest customer satisfaction and product traction. Therefore, without any marketing efforts, we attract recurring sales and a loyal customer base. With consumer feedback and surveys we are constantly improving our blends to be most effective for the consumers.

INTRODUCTION TO PROTEIN

- If you want to see the best results for your training program, proper nutritional guidance and intake is critical. This means one must have proper intake of calories, proper ratio of macronutrients –protein, Good carbohydrates and Good fats. Proper timing of these macronutrients is also essential.
- Many bodybuilders including professionals do not understand the basics of Body building - **Maintaining a positive nitrogen balance.** (Building muscle vs. breakdown of muscle.)
- The body uses protein to build, repair and maintain muscle tissue. Protein consists of amino acids, which are the building blocks of protein. There are approximately 20 amino acids, **9 of which are considered essential because our body cannot make them, they must be supplemented by our diet.**
- Protein is an organic compound composed of carbon, hydrogen, oxygen and nitrogen. The function of protein is to synthesize structural proteins like muscle and it's also responsible for synthesizing structural hormones like insulin growth hormone and insulin growth factor. These are anabolic hormones that can influence many functions in the body including muscle growth, recovery, strength and the absorption of nutrients for muscles. Our body that consumes proteins undergoes structural and biochemical reactions, which helps in muscle contraction, cardiovascular function and also strengthens immunity from diseases.



Why Do We Need Protein Supplementation ?

- Animal protein is high on carbs, trans fat and cholesterol and has long term other side effects.
- Whole Egg(cooked) has very low absorption rate of just 2.9g/hr, so maximum intake can be $20\text{hr} * 2.9 = 58 \text{ g/day}$.
- Protein supplement have a far high absorption rate of 8-10g/hr, so maximum intake can be $20\text{hr} * 10 = 200\text{g/day}$.
- It is next to impossible to consume six perfectly balanced daily meals required to get in shape, (without bad carbs & bad fat) because of hectic schedule.
- Protein supplements can be used for replenishment of protein deficiency at the right time (pre work out, intra work out, post work out etc.). Protein supplements are the easiest way to supplement protein and come in great flavors to suit the unique taste of every individual.
- For body builders and fitness enthusiast its best to have whey protein every hour or two and impossible to have six small high protein meals.



Understanding Protein Absorption

All proteins are not the same. They differ in their amino acid content, their bioavailability, their time for absorption, and the rate at which they can be absorbed. All of these factors affect the effectiveness of a protein to raise the blood amino acid concentration. It is the rise in blood amino acids that allows the body to repair and grow muscle.

Protein is absorbed in the 3 parts of the small intestine. It is first broken apart by enzymes into peptides and amino acids and then these are absorbed by the cells lining the small intestine.

Time for Protein Absorption

Whey Isolate: 60-90 min

Whey Concentrate: 2-3 hours

Casein: 3-4 hour

Soy: 3-4 hours

Egg: 3-4 hours

Rate of Protein Absorption

In addition, not only is the time for absorption important, but also how much can be absorbed per hour. You can see from below that only a small amount of egg and milk protein can actually be absorbed each hour.

Protein Source	Absorption Rate (g/hr)
Egg Protein Cooked	2.8
Egg Raw	1.3
Whey Isolate	8-10
Soy Isolate	3.9
Milk Isolate	3.5
Casein	6.1
Free Amino Acids	7

Understand digestability of foods by our body (GI)

There are 4 main areas which results in breakdown of foods, mouth, stomach, small intestine & large intestine

6-8 hours to digest foods	Food get enzymes right from the mouth.
Gets mixed with other acid in stomach	And then further it gets absorbed in small intestines

Protein digestion begins in the stomach with the action of an enzyme called pepsin. Pepsin is the active protein-digesting enzyme of the stomach. When pepsin acts on the protein molecule, it breaks the bonds that hold the protein molecule together, called peptide bonds. So, you can think of pepsin as the enzyme that breaks peptide bonds. When these bonds are broken, you get chains of amino acids linked together called **polypeptides**. Since we know that the prefix 'poly' means 'many,' we can easily recall that a polypeptide is many amino acid units joined together. These polypeptides then move into your small intestine, where digestion will be completed by additional enzymes.

In the small intestine, pancreatic enzymes called trypsin, chymotrypsin, and carboxypeptidase, really go to work breaking down the polypeptides. These enzymes enter the duodenum via the pancreatic duct. These pancreatic enzymes are helped by the brush border enzymes. We previously learned that the brush border enzymes are special enzymes found on the microvilli of the small intestine that complete digestion. The peptide bonds holding the polypeptides together continue to be hydrolyzed, or broken down, and result in smaller units called **peptides**. Peptides are simply defined as two or more amino acids linked together. Enzymes continue to break down polypeptides and peptides into amino acids. Because amino acids are very small, they are able to be absorbed through the small intestine lining and into your bloodstream.

What is Animal & Vegetable Proteins? How do they differ?

- Animal Foods, higher in Protein, should be consumed very carefully and selectively, despite its advantages. Animal protein contains a lot of saturated fat and cholesterol and is known to have harmful effects if taken excessively over a long period of time. Therefore, Protein supplementation is preferred
- Despite all the above considerations, we must not forget the nutritional value of food, as it contains, a lot of other nutrients like vitamins and minerals. Minerals & vitamins are necessary to help utilize the protein, which has been supplemented.

Therefore protein supplementation along with a balanced diet is recommended.

S.No	CRITERIA	ANIMAL	VEGETABLE
1.	AMINO ACID	Animal Protein contains all essential amino acids.	Plants do not have all EAA'S and have to be supplemented.
2.	ABSORPTION	Animal protein is better absorbed. About 90%	Vegetable protein has less absorption. About 60-70%
3.	DIGESTIBILITY	More digestible. About 95-100%	Less digestible. About 85%
4.	BIOLOGICAL VALUE	Higher BV	Lower BV
5.	FATS	High trans fat (bad)	Lower Trans fat
6.	CARBOHYDRATES	Rich in carbs	Low carbs
7.	CHOLESTEROL	High	Low
8.	MINERALS & VITAMINS	Rich in vitamins & minerals	Comparatively less

Biological Value (BV) of Protein & Its importance

- The biological value provides a good measure of the Instant usability of proteins in the diet and also plays a valuable role in investigation of some metabolic diseases. The biological value is a scientific variable determined under very strict and unnatural conditions. The biological value has designed to evaluate the usability of proteins of an individual and the biological value of a diet will vary on age, weight, health, sex, and recent diet, current metabolism in an individual.
- It is not a test designed to evaluate the usability of proteins. In addition, biological value of the same food varies significantly in species to species. The biological value is still relevant in provided limitations of everyday diet to some extent. No matter the individual or their conditions a protein source with high biological value, such as egg, will always be more easily used than a protein source with low biological value.
- The biological value is a measurement of protein, how efficiently the body consumed protein in the diet for growth. A food with a high value correlates to a high supply of the essential amino acids. Animal sources typically possess a higher biological value than vegetable sources due to the vegetable source's lack of one or more of the essential amino acids.
- Whey protein Isolate has highest BV and helps the body post work out, when it is most deficient of protein. The high BV of WPI enables the quickest replenishment of post work out protein deficiency

Bioavailability

Bioavailability is the percentage of the absorbed protein that can actually be used by your system. The higher the number the better the protein is used.

Protein Source	Bio-Availability Index
Whey Protein Isolate (WPI)	145-159
Whey Protein Concentrate (WPC)	104
Whole Egg	100
Cow's Milk	91
Egg White	88
Fish	83
Beef	80
Chicken	79
Casein Protein	77
Rice	74
Soy	59
Wheat	54
Beans	49
Peanuts	43

Amino Acids

- Amino acids are the building blocks of protein. Protein plays a crucial role in almost all biological processes. It's an important part of every human body.
- There are 20 different amino acids – nine of which are called “essential” and 11 of which are labeled as “non-essential.”
- The human body needs all 20 of these amino acids, in varying degrees, to be
- Healthy and fully functional. All 20 have distinct chemical structures and are used for different roles – such as forming neurotransmitters, forming hormones and producing energy. But their primary role is to build proteins.

Essential Amino Acids

- There are the 9 amino acids that you must obtain by eating various foods. Adults need to eat foods containing the following eight amino acids: methionine, valine, tryptophan, isoleucine, leucine, lysine, threonine and phenylalanine. Histidine, the ninth amino acid, is only necessary for babies. Out of these EAA's, Isoleucine, leucine, valine, are BCAA (branched chain amino acids)
- Instead of storing up a supply of the essential acids, the body uses them to create new proteins on the regular basis. Therefore, the body needs a constant supply of these essential amino acids to stay healthy.

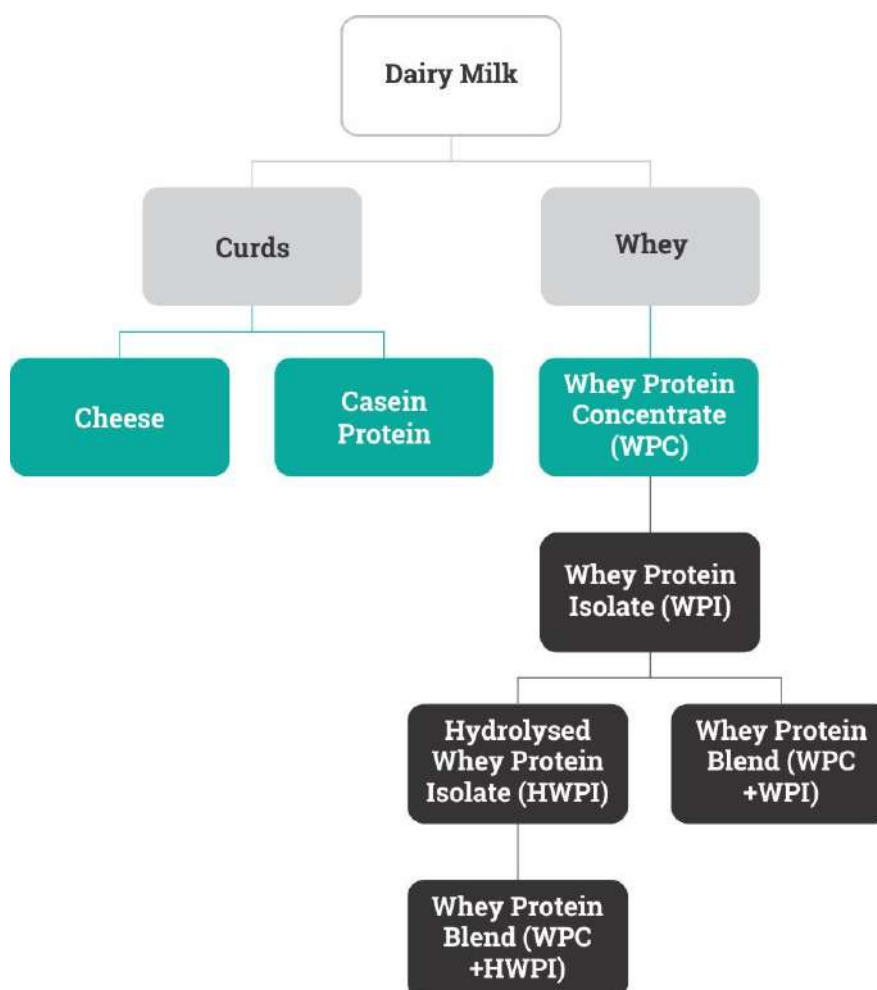
Non-Essential Amino Acids

The human body synthesizes the non-essential amino acids, 11 of which exist. Although they are an important part of building proteins, they do not need to be included in an everyday diet. Eight of these non-essential acids are also known as “conditional,” meaning that the body may not be capable of producing enough of them when presented with substantial stress or illness.

Essential	Non-Essential
Histidine	Alanine
Isoleucine (BCAA)	Arginine
Leucine (BCAA)	Aspartic acid
Valine (BCAA)	Cysteine
Lysine	Glutamic acid
Methionine	Glutamine
Phenylalanine	Glycine
Threonine	Proline
Tryptophan	Serine
	Tyrosine
	Asparagine
	Selenocysteine
	Pyrrolysine

WHEY PROTEIN

- Whey is one of the proteins found in cheese. It is the liquid that remains after fat and casein have been removed from milk. Whey protein a mixture of globular proteins isolated from whey. Whey protein is also called serum protein. Two main proteins make up milk: 80% Casein + 20% Whey = milk protein
- Whey is one of the richest sources of BCAAs, which include the three amino acids leucine, isoleucine and valine. The biological components of whey, including lactoferrin, beta-lactoglobulin, alpha-lactalbumin, glycomacropeptide, and immunoglobulins, demonstrate a range of immune-enhancing properties. Whey has the ability to act as an antioxidant, antihypertensive, antitumor, hypolipidemic, antiviral, and antibacterial.
- The primary mechanism by which whey is thought to exert its effects is by intracellular conversion of the amino acid cysteine to glutathione, a potent intracellular antioxidant. A number of clinical trials have successfully been performed using whey in the treatment of cancer, HIV, hepatitis B, cardiovascular disease, osteoporosis, and as an antimicrobial agent. Whey protein has exhibited great benefits in the arena of Bodybuilding (exercise performance and enhancement.)



Different forms of Whey Proteins

- Whey protein typically comes in different forms: **Isolate (WPI)**, **concentrate (WPC)**, **hydrolyzed (WPH)** and **Native Whey**.
- **Whey protein concentrate** is one of the most basic forms of protein. It has a low lactose level that is well tolerated by most lactose-sensitive people. It has trivial amounts of fat and carbs relative to your overall nutrient intake. Concentrates have typically a low (but still significant) level of fat and cholesterol but, in general, compared to the other forms of whey protein, have higher levels of bioactive compounds, and carbohydrates in the form of lactose — they are 29%–89% protein by weight. Whey concentrate can be used both pre and post workout and can also be used as a snack in between meals. This is not a preferred source of protein to be used at night. This has a BV of 104.
- **Whey protein isolate** is virtually fat-free for those wishing to eliminate as much fat from their diet as possible. It is typically lactose free for those few individuals who are very sensitive to the low-lactose levels found in whey concentrate- they are 90%+ protein by weight. This has a BV of 145- 152.
- **Hydrolysates** are whey proteins that are predigested and partially hydrolyzed for the purpose of easier metabolizing, but their cost is generally higher. Hydrolysate protein is the most expensive source of protein. Highly hydrolyzed whey may be less allergenic than other forms of whey.
- **Whey (Casein mixed) protein** - Milk protein isolates contain both casein and whey proteins. This type of protein is mostly used in a blended protein source where multiple types of protein are used. Its BV is 77 (slow release), however has a better amino profile. Casein is the preferred protein at bedtime.
- **Native whey protein** is extracted from skim milk, not a byproduct of cheese production, and produced as a concentrate and isolate

Whey protein concentrate / isolate seems to be the overall best option for basic body builders. It offers great value for money and retains most of the beneficial nutrients found naturally in whey. Most people also prefer the taste, which is probably because of the small amounts of lactose and fat.

Types of Whey	Protein Concentration	Other Components	Allergens
Whey Protein Isolate	90%-95% Whey Protein	Only trace amounts of fat, lactose, or other minerals	Low for lactose intolerance ; high for milk proteins.
Whey Protein Concentrate	25%-89% Whey Protein Typical levels found in commercial products are 80%	Whey protein isolate contains some fat, lactose and other minerals. Typically as protein percent increase, the amount of the other content decreases.	High for lactose intolerance ; high for milk proteins.
Hydrolyzed Whey	80%-90% Whey Protein Highly variable in concentration but often seen at this level	Highly variable	High for lactose intolerance; low for milk proteins.

Isolates Whey Proteins vs. Concentrates Whey Proteins

Concentrates Whey Proteins	Isolates Whey Protein
Whey Concentrates in the first step of purification and contains less amount of proteins.	Isolates Whey Proteins is double purified and contains proteins more comprising Concentrates Proteins.
Whey is milk product when we purify the milk Whey separated from other substance. That's called Whey.	Isolates Proteins is double purified with method name ion-exchanges or cross-flow micro-filtration.
That Whey comes in the form of Concentrate Whey Protein have a extremely high lactose and fat.	It comes with very low cholesterol, fat and lactose. Lactose is milk sugar.
Whey Concentrate Proteins have Biological value (BV). BV used to purify the Whey Protein from this lactose and fat	Companies also prepared lactose free Isolates Protein they add lactose which helps in fast digestion.
This will give you strong muscles, recover tissues and protect body from illness.	If you are lactose and gastric intolerant then Isolates protein is the best choice.
Lower Biological Value 104	Higher Biological Value 145-159

Whey Protein, A Great Protein Source!

- It improves sports performance because it reduces stress and lowers cortisol levels (hormone that breakdown the muscle).
- Improved immunity by increasing glutathione, which is a water-soluble antioxidant found in the body.
- Reduces blood pressure.
- It can help to fight HIV.
- It helps to reduce overtraining (which is linked to low levels of glutathione).
- Whey proteins are highly digestible (6-8g /hour) and have an even better amino acid profile than egg whites (2.9g /hour)
- Whey protein has the highest biological value (value that measures how well the body can absorb and utilize amino acids from protein) of any protein.
- Whey is not the steroid-like substance that many anti-supplement marketers would like you to believe it; it is the most valuable addition to one's diet for the reasons outlined above, when for weight loss as research shows when on high protein diet you lose fat & lean mass (critical for all body functions).

How to Calculate Your Protein Intake

Use the following chart to find out how much protein is recommended to help you achieve optimal exercise and health benefits. Calculate your recommended protein intake based on the type of exercise you do most often.

If you are:		Multiply your body weight by:
A recreational exerciser	1.1-1.5 g/kg	with good carbs
An endurance athlete	1.5-1.7 g/kg	
A strength training athlete	1.5-1.7 g/kg	
An athlete restricting calories	1.7-2.0 g/kg	with less carbs
Bodybuilder	2.0-2.5 g/kg	
Professional Bodybuilders	2.5-3.5 g/kg	
Max. Safe Limit	3.5 g/kg	

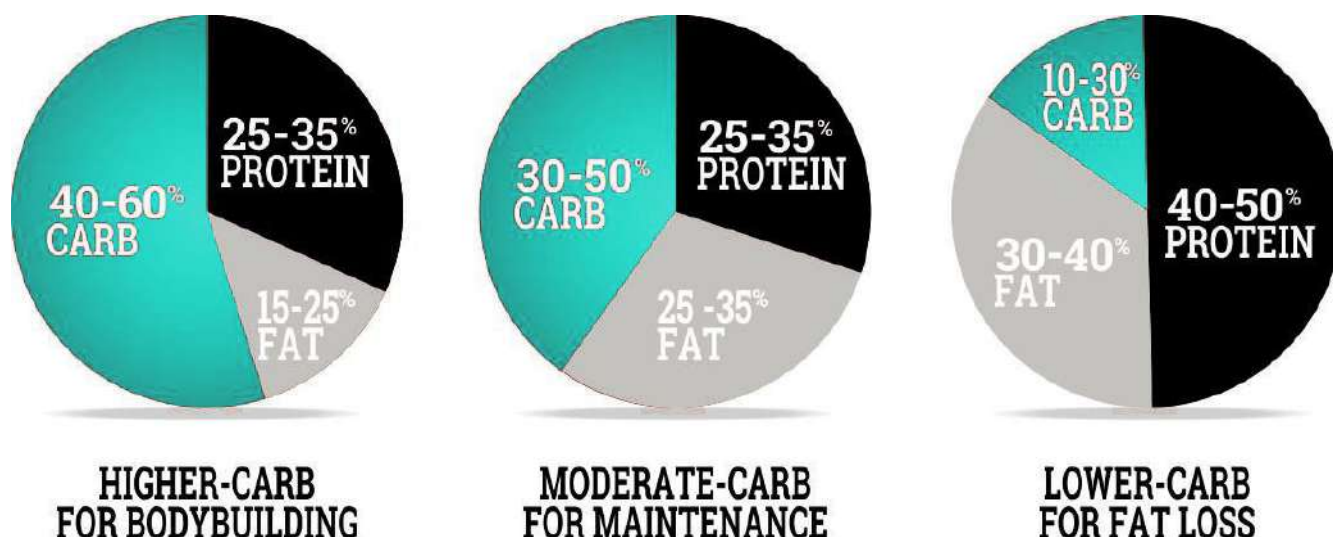
_____	x	_____	=	_____
Weight (kgs)		Recommended grams of protein per kg		Grams of protein per day

10 SIMPLE PROTEIN GUIDELINES

Protein is a key element in building your physique to its maximum potential, and when used properly will put a positive twist on your bodybuilding career. By applying these ten simple guidelines, you will be able to get the most from the protein you ingest, and will be well on your way to getting huge and ripped.

1. The correct ratio of total protein and caloric intake will determine whether or not anabolism within the body's cells occurs. Anabolism is the condition inside a muscle cell, which will allow for muscle growth. If your goal is to gain mass, make sure you are eating enough protein to complement the calories from carbohydrate and fat. Try to get 40 - 45% of your daily calories from protein.
2. In order to support the extreme demand of protein in your body, you must meet your daily minimum protein requirements. Daily protein requirement vary from person to person, depending on your body type and level of physical activity. You must consume at least 2 gram (g) of protein per kg of bodyweight daily if you are following a proper bodybuilding routine, so a 80 kg bodybuilder, would need a minimum of 160g of protein per day
3. When calculating your total daily protein intake, only include sources such as meat, fish and eggs. Do not count your protein from sources like rice, juice and bread. This is another technique to ensure you are getting enough amounts of protein.
4. When the time comes to get ripped, whether it for a competition or for the beach, you have to reduce your fat and carb intake. This forces the body to burn your valuable protein for fuel and if there isn't enough free protein in your system, the body will begin to cannibalize fat for energy. This is why many bodybuilders are unable to do well at competitions. They lose their mass for the sake of becoming ripped. Dieting professional bodybuilders should increase their protein intake to 3.5 grams per kg of bodyweight or even higher in some cases. Better safe than sorry!
5. Contrary to popular belief, we do not believe there is such thing as a maximum protein intake. If you are training to the very limits in the gym, and using several muscle shock techniques, you can never get too much protein. The harder you train, the more protein you require to repair the damage.
6. Don't let all the names and fancy marketing schemes fool you into paying too much for a poor product. Do your research well and buy a product more suited to your needs and goals.

7. Good Carbohydrates are essential for bodybuilders who are looking to put on mass. Carbohydrates are the main fuel source for the body and also provide a protein sparing effect. The ratios of consumption will vary as per your goal. Carbohydrates ensure you get maximum efficiency from the protein that you ingest by allowing the carbohydrates to be digested and processed as a fuel, while using a higher percentage of protein for repair and growth.



8. One can ignore the recommended dietary allowances (RDA) for protein. They are inapplicable to bodybuilders since the studies were performed using general population. There's no way to have the same protein demand as a bodybuilder.
9. Biological value (BV) is a term used to measure the amount of nitrogen absorbed by the body from protein. Whey protein has the highest BV, egg is second best, and milk protein is third, while soy has one of the lowest BV's because it comes from beans. It's pretty much a no-brainer about which ones are the best to use.
10. We recommend using a combination of whey protein powder and casein and food rich in protein, which is naturally packed with branched chain amino acids (BCAA), minerals, vitamins and enzymes. These powders will ensure quick absorption and it's less filling method of bumping up your protein intake. Try to get as much as 40% of your daily protein intake from WPI/WPC- 30% each from casein protein and food as it has the highest BV & absorb extremely quickly into muscle tissue & perfect for post workout especially when you are nitrogen & amino acid deficient.

WHEY and CASEIN

Whey is considered a fast-release protein, as it is quickly digested and absorbed. Casein is comparatively a slow release supplement. A diet supplemented with both whey and Casein works best as one gets the benefit of both speeds of protein (i.e., Rapid yet sustained delivery of protein building blocks to your growing muscles).

There might be other benefits of combining your whey and casein. Whey protein is rich in a number of biologically active peptides (i.e., short chains of amino acids). These short chain peptides may provide beneficial properties (i.e., lower blood pressure, improve mood). Casein plays an important role in preserving the functions of such peptides. This property is found to be unique to casein.

Casein blocks and slows the breakdown of whey peptides in your intestine. It even increases the lifespan of some peptides by up to 15 times. This provides peptides a greater timeframe to do your body good. Similarly, casein may also render your whey protein more useful to your muscles by slowing down its digestion and absorption. Therefore, casein makes up for its low BV

To summarize it, a protein blend supplement containing casein and whey may give you not only the body building benefits of slow- and fast-release proteins, but also an added beneficial properties that might be absent when consuming either protein on its own

WHEY vs CASEIN	
Can Elicit Protein Synthesis	Stop Protein Breakdown
In Fast Digesting high BV	Is Slow digesting. But better amino profile
Great For Use Post-workout: Studies Have Shown Whey Protein Is More Effective AT Eliciting Muscle Protein Synthesis After Exercise Than Casein.	Great For Use Hours Before A Workout, Bed, Or During Periods Between Meals Due To Its Slow Digesting Compounds & Ability To Keep People Satiated
Great to Use Within Recipes To Increase Protein Content.	Great to Use Within Recipes To Increase Protein Content & Acts As A Thickening Agent.
CONCLUSION: Both whey and casein should be added to your supplementation regime 50% WP, 25% Casein & 25% Foods to Elicit around the clock synthesis and help you meet your protein daily intake requirements. They should be taken together to reap the benefits of both fast digesting should whey and slow-digesting casein. And maintenance of unbalance of building muscle and reducing breakdown of muscle.	

How Casein Protein is made?

STRENGTH & MUSCLE :
HOW CASEIN PROTEIN IS MADE

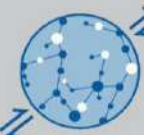
How does whey's calcium-rich cousin change from milk to protein powder?



- 1** **WHEY IS SEPARATED FROM MILK USING STRAINING METHODS. THE LEFT OVER SOLID PART IS THE CASEIN PROTEIN.**

- 2** **WHEN MANUFACTURING CASEIN, WHOLE MILK IS TREATED WITH A CHEMICAL, USUALLY CHYMOSIN, CAUSING THE MILK TO COAGULATE & FORM A SOLID MASS OF CASEIN.**

- 3** **THE MASS IS SENT THROUGH A SERIES OF MICROFILTERS THAT PURIFIES IT & CONCENTRATES THE MICELLAR SEGMENTS OF CASEIN.**

- 4** **MICELLES HAVE A PARTICULAR MOLECULAR STRUCTURE THAT GIVES CASEIN ITS OWN UNIQUE DIGESTIVE PROPERTIES.**

- 5** **THE FINAL PRODUCT IS THE CASEIN PROTEIN SUPPLEMENT.**


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7 BENEFITS OF CASEIN

7 BENEFITS OF CASEIN PROTEIN POWDER

Here Is All You Need To Know!

- 1 Muscle Mass**
Individuals who supplement casein protein, gained more lean mass, increased their muscle mass and body strength.
- 2 Reduces Cravings**
Casein protein helps to reduce hunger cravings. It has been shown to provide a slow and steady supply of amino acids for as long as eight hours.
- 3 Lose Weight & Burn Fat**
Individuals who supplemented casein protein had a better overall fat to muscle ratio and higher metabolic rate during resting periods.
- 4 Improved Physical Performance**
Casein protein can enhance power output, increase muscular strength and endurance.
- 5 Look Better**
Individuals who reach daily required protein intake, have been shown to have lower body fat percentages.
- 6 Boost Recovery**
Casein has been shown to boost muscle repair. A boost in recovery will allow you to train with more consistency and frequency.
- 7 Boosts Immunity and Energy**
Protein provides you with longer lasting energy. Casein is packed with antioxidants that help prevent illness and disease.

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The Ideal time to Use Casein Protein

The best time to use casein protein is before bed (if your goal is to build muscle and potentially gain weight) or as a meal replacement/snack between spaced-out meals. As casein is digested slowly, it means following a workout it will take longer than other types of protein (such as whey) to reach your muscles.

If you want to supply your damaged muscle tissue with nutrients post workout, casein is not the best choice over faster-acting proteins because it won't give you the instant boost of Amino acids. WPI is the best post workout choice because whey protein is quickly absorbed, due to high BV. Your muscles are searching for a rapid supply of nutrients after you train in order to carry out muscle synthesis, so holding off on Casein would be a better choice post workout.

Casein Protein Takeaways

Casein protein has similar health benefits as whey protein, so it is best option if you are looking for an alternative protein source to whey; casein is your best option. However, it must be kept in mind that casein is slower acting than whey, therefore it will take longer to reach the muscles and even longer to leave the body. So if you're looking to put on muscle mass quickly, whey might be a better option.

However, casein works especially well at night while you are sleeping. It helps repair muscles and even strengthen them because of its slow acting effect. A thing to keep in mind while buying protein is to always look for A2 casein from organic and grass-fed cows or goats. It can be difficult to differentiate between A1 and A2 casein, but your best choice should be going with the most natural sources. A2 is the healthier, more natural form of casein that's been produced long before animal domestication. Keeping these facts in mind will help you reap the most benefits from your protein sources, keeping your muscles in the best condition and fatigue free.

ROLE OF DIGESTIVE ENZYMES IN PROTEIN SUPPLEMENTS

"Are you taking over 100 grams of protein per day... from shakes, supplements, and food...but you're not making the gains you expect?"

Starting in the 80's, supplement companies began pushing massive protein consumption. We all believed that "MORE PROTEIN = MORE MUSCLE GROWTH" that is not true.

Let's say you eat 24 egg whites a day. You're consuming about 86.4 grams of protein.

However - just because something contains 86.4 grams of protein... it doesn't necessarily mean you're going to absorb all 86.4 grams. Without enzymes, most of it ends up in your toilet bowl.

This is because your small intestine can only absorb protein that's been broken down into smaller building blocks - called amino acids.

Different types of Enzymes

- Amylase – breaks down carbohydrates, starches, and sugars which are prevalent in potatoes, fruits, vegetables, and many snack foods
- lactase – breaks down lactose (milk sugars)
- diastase – digests vegetable starch
- sucrase – digests complex sugars and starches
- maltase – digests disaccharides to monosaccharides (malt sugars)
- invertase – breaks down sucrose (table sugar)
- glucoamylase – breaks down starch to glucose
- alpha-galactosidase – facilitates digestion of beans, legumes, seeds, roots, soy products, and underground stems

How to increase absorption of protein

It doesn't matter if you're consuming 30 grams of protein... or 300 grams of protein -- if you don't have a sufficient supply of enzymes to digest the protein, your muscles will be starving for those vital building blocks.

Potent enzymes called Protease break down protein into absorbable, anabolic amino acids... which are what your muscles require for recovery and growth.

A great enzyme formula contains various proteases that work at different pH levels. This ensures that the protein gets broken down into amino acids at every stage of digestion.

- Protease – breaks down proteins found in meats, nuts, eggs, and cheese
- pepsin – breaks down proteins into peptides
- peptidase – breaks down small peptide proteins to amino acids
- trypsin – derived from animal pancreas, breaks down proteins
- alpha – chymotrypsin, an animal-derived enzyme, breaks down proteins
- bromelain – derived from pineapple, breaks down a broad spectrum of proteins, has anti-inflammatory properties, effective over very wide pH range
- papain – derived from raw papaya, broad range of substrates and pH, works well breaking down small and large proteins
- Lipase – breaks down fats found in most dairy products, nuts, oils, and meat
- Cellulase – breaks down cellulose, plant fiber; not found in humans

Timing

Enzymes work on contact. So the enzymes must be in physical contact with the food or substance in order to work. Enzymes usually come in capsules you can open or swallow, or as enterically coated tablets. The capsules are preferable because they can either dissolve in the stomach releasing the enzymes, or you can open the capsules and mix the enzymes with any food or drink and take at the beginning of a meal. This allows the enzymes to be breaking down food in the stomach before it passes in into the small intestine.

Capsules are either vegetable-based (veggie) or gelatin-based. Both types will dissolve in your gut. Some people find that they get much better results from veggie capsules if they wait about 20-30 minutes to allow more time for the veggie capsules to dissolve. This has not been an issue with gelatin capsules because they dissolve right away at body temperature, whereas the veggie capsules may not. Other people find they get best results by opening the capsules and mixing the enzymes with the food before eating. You may want to experiment a little to see which method gives you best results.

Concentration of Substrate

In the presence of a given amount of enzyme, the rate of an enzymatic reaction increases as the substrate concentration increases until a limiting rate is reached, after which further increase in the substrate concentration produces no significant change in the reaction rate.

The single most important property of enzymes is the ability to increase the rates of reactions occurring in living organisms, a property known as catalytic activity. Because most enzymes are proteins, their activity is affected by factors that disrupt protein structure, as well as by factors that affect catalysts in general. Factors that disrupt protein structure, include temperature and pH; factors that affect catalysts in general include reactant or substrate concentration and catalyst or enzyme concentration. The activity of an enzyme can be measured by monitoring either the rate at which a substrate disappears or the rate at which a product forms.

Let's consider an analogy. A train (enzyme molecules) with 1 coach is waiting to ferry 1000 people (substrate) from location A to B. Single coach train can transport 100 people at a time and takes 10 minutes to reach point B from A. So it will take 10 rounds or 100 minutes for a train with single coach to transport 1000 people. However, If we increase the coaches of that train to 10 than same train can transport 1000 people in flat 10 minutes. With the same principle, the rate of enzyme application directly depends on substrate which acts a medium and is supremely responsible for the apt enzyme functioning.

Activity of the Enzyme

Without a doubt, this is the single most important piece of information the purchasing agent needs. Enzymes are ALWAYS sold on the basis of the potency. The activity/potency is a measure of how much enzyme is needed to accomplish a specific reaction within a specified time. For example, one gram of lactase testing 1000 FCC lactase units per gram may convert 99% of the lactose in one liter of milk at a specific temperature within 24 hours. Lactase testing 10,000 FCC units per gram would only require one tenth of a gram to do the same job. Lactase testing 100,000 FCC units per gram would only require one one-hundredth of a gram to do the same job. If the price of the 100,000 u/g lactase is less than 100X the price of the 1000 FCC lactase, then the concentrated lactase is the better value.

Soon we are going to launch our new pro series for all the stomach sensitive people or serious body builders. Our pro series will have a perfect blend and will be loaded with various enzymes at various ph levels. Thereby, ensuring maximum absorption, which will lead to best results.

OTHER SUPPLEMENTS

FISH OIL

Fish oil is a form of fatty acid that is derived from the tissues of oily fish. It contains the omega-3 fatty acids, including eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA). Omega-3 fatty acids help in maintaining healthy cholesterol levels, supporting good bone health and fighting depression and anxiety.



MULTIVITAMINS

The human body requires various vitamins and minerals on a daily basis to keep healthy and functioning at your best. The best thing you can do for your body is to eat a balanced diet and supplement it with a quality multivitamins. Each of those vitamins/minerals has their own benefits and plays their own roles in your body. Reduce Stress, Support healthy aging, Improve short-term memory, Boost energy levels, Detoxify your body, and Prevent diabetes complications.

BIOTIN

For those hoping to grow their hair longer, faster, biotin has served as a vitamin supplement used in the quest for maximized hair growth. Biotin is a B-complex vitamin that can be found in both supplement and food form. Biotin deficiencies are associated with hair loss. Biotin is also used for preventing and treating biotin deficiency associated with pregnancy, long-term tube feeding, malnutrition, and rapid weight loss. It is also used orally for hair loss, brittle nails, skin rash in infants (seborrheic dermatitis), diabetes, and mild depression.



Amplifying the Body building regime with BCAA, CREATINE, GLUTAMINE, CAESIN PROTEIN, FISH OIL AND MULTIVITMAINS

Whey Protein with BCAA

When you're trying to squeeze the most out of your training program, now you know that whey protein is a must but that's not the whole story. Pair your whey protein with a BCAA supplement for a more complete way to support your muscle-building campaign.

WHEY PROTEIN	BCAA
• Promotes increases in muscle strength and size • Helps reduce muscle breakdown • Speeds up post-workout recovery • Supports fat loss when combined with resistance training	• Build and repair muscle tissue • Diminish muscle soreness from intense training • Can reduce the perception of fatigue during workouts, so you can crush that last set

WHEN TO TAKE BCAAs

Sipping BCAAs during your workout boosts energy level, allowing you to train harder, longer, and with more intensity. They're rapidly absorbed and released into the bloodstream and can significantly reduce muscle protein breakdown, decrease muscle soreness, and speed up recovery. Add some BCAA to post-workout whey protein, and you have the perfect combination for maximal increases in muscle strength and size.



Whey Protein with Creatine

Taking the both supplements together will increase the storage of creatine in the muscles and will get better energy production in results so that it can be continuously supplied when needed. The combination will lead to more muscle volume and better muscle growth. It will boost the overall athletic performance. It will provide more strength to the muscles as compared to when taken alone. This supplementation combination will lead to faster muscle recovery after a workout session hence there are more chances that you will get a good and strong physique with well built muscular frame. The combination of whey protein with creatine, supplements you to gain weight faster, if you want to achieve fast and overall better results for your muscle performance.

Serving Suggestions

Using creatine and protein powder to drink as a shake after your workout. Be sure to include a good source of carbohydrate in your shake, which not only helps replenish energy stores in your muscle, but also improves creatine absorption.

Things to Consider

Creatine supplementation increases fluid retention in your muscles, so drink plenty of water when supplementing your diet to prevent dehydration. Also, it is not recommended to combine your creatine supplement with caffeine, due to health concerns.



Whey Protein with Glutamine

Glutamine and protein supplementation are safe to take together, considering that glutamine is actually a building block of protein. Both supplements are naturally occurring amino acids that are often used by athletes to help in improve their performance and recovery time.

Glutamine and protein supplements are used by athletes, especially strength-training athletes, to help increase muscle mass, recovery time and to boost their immune system. The two supplements are considered safe in taken together in most cases, although you should consult your nutritionist before taking any type of supplement. Protein and glutamine are both needed by the human body in order to maintain good overall health.

As you exercise, especially lifting weights, your muscle tissue breaks down. Consuming protein helps to restore the muscle tissue, which is how your muscle gets larger and stronger. Glutamine supplementation is used to treat injuries/infections, inflammatory bowel disease, HIV/AIDS, cancer and for athletic performance, according to the University of Maryland Medical Center.



Quick Take away's

- To see best results proper intake of calories, proper ratio of macronutrients – protein, and good carbohydrates - and proper timing of these macronutrients is necessary.
- Biological Value (BV) is a value that measures how well the body can absorb and utilize a protein based on nitrogen retention. The higher the biological value of the protein you use, the more nitrogen your body can absorb, use, and retain. WPI has the highest BV of 145 - 159.
- There are 20 different amino acids – nine of which are called “essential” (body can not produce and it has to be taken from diet) and 11 of which are labeled as “non-essential” that you must obtain by eating various foods or supplements.
- Protein comes in different form whey, egg, casein, soya, milk protein, etc.
- Whey protein typically comes in different forms: hydrolyzed (WPH), isolate (WPI), concentrate (WPC), , and Native Whey.
- It is essential to calculate the recommended protein intake.
- You should get 40 - 45% of your daily calories from protein.
- Don't let all the names and fancy marketing schemes fool you into paying too much for a poor product. Do your research well and buy a product more suited to your needs and goals. Pick your right mix
- Sinew Palladium has a huge competitive advantage over ON Whey Gold, Ultimate nutrition, Muscle Tech and MuscleBlaze. See Comparison
- Sinew RAW has a huge competitive advantage over Raw MuscleBlaze. See Comparison
- Sipping BCAAs during your workout boosts energy level, allowing you to train harder, longer, and with more intensity.
- Take whey protein first thing in the morning, post-workout, and/or to replace protein in a meal. Take BCAAs immediately before and/or during your workout.
- Taking the whey protein and creatine together will increase the storage of creatine in the muscles and will get better energy production in results so that it can be continuously supplied when needed. The combination will lead to more muscle volume and better muscle growth.
- Glutamine and protein supplements are used by athletes, especially strength-training athletes, to help increase muscle mass, recovery time and to boost their immune system.
- Casein is comparatively a slow release supplement but with a better amino profile (just what one body needs). A diet supplemented with both whey and Casein works best as one gets the benefit of amino profile of casein to speeds of protein (i.e., Rapid and sustained delivery of protein building blocks to your growing muscles). The best time to use casein protein is before bed (if your goal is to build muscle and potentially gain weight) or as a meal replacement/snack between spaced-out meals
- Good carbohydrates are the bodies preferred energy source, after ingesting, it turns into glucose, which fuels muscular contractions and glycogen, which gets stored in the muscles and liver for future use. Without storing enough good carbohydrates in the muscles, you will lack the energy to train hard. Good Carbohydrates are easy to differentiate. Whole grains, oatmeal, brown rice and sweet potatoes. Good carbs help you lose weight.
- Fats, technically called lipids, are the most energy dense of the three-macro nutrients. They are composed of building blocks called fatty acids, which fall into 4 main categories: Saturated, Polyunsaturated, Monounsaturated, trans fat.

WHAT, WHEN AND WHY?

*Creatine and Glutamine should not be taken together.

*Consume a lot of water with creatine.

SUPPLEMENT	WHEN TO TAKE?	WHY?
PROTEIN	- Half hour before a workout - Right after a workout	Consuming Protein pre-work out sets up the "anabolic window" that provides your muscles with adequate nutrition. Post-work out your muscles are like sponges and Protein provides instant nutrition for muscle recovery and growth.
BCAA	DURING WORKOUT	Sipping BCAAs during your workout boosts energy level, allowing you to train harder, longer, and with more intensity. They're rapidly absorbed and released into the bloodstream and can significantly reduce muscle protein breakdown, decrease muscle soreness, and speed up recovery.
CREATINE	Before workout After workout	Taking creatine pre-workout allows enough time for it to be digested and put to good use by the body. Thereby causing an immediate effect on your workout. Creatine levels can become depleted very quickly, and take long to replenish. Take creatine post-workout to replenish the creatine in your body
GLUTAMINE	- As you wake up - An hour after work out - Before bed	Growth hormone level rises significantly by taking glutamine before bed. Take glutamine after workout for recovery and recuperation from high intensity workouts.
CASEIN	At night	Casein works especially well at night while you are sleeping. It helps repair muscles and even strengthen them because of its slow acting effect
FISH OIL	- With primary meal - With meal at dinner time (Preferred)	Omega -3 fatty acids, help in maintaining healthy cholesterol level, supporting good bone health and fighting depression and anxiety. Each of those vitamins/minerals has their own
MULTIVITAMINS	- Morning meal (Preferred) - Any meal	benefits and plays their own roles in your body. Reduce Stress, Support healthy aging, Improve short-term memory, Boost energy levels, Detoxify your body, and Prevent diabetes complications.



CARBOHYDRATES

- Carbohydrates are wrongfully viewed as the main culprit for gaining body fat. Carbohydrates have a bad reputation lately because of low carb stuff.
- Are they responsible for fat gain? Should bodybuilders avoid them?

The answer is NO to both. The ignored fact is that, the Good carbohydrates are the preferred fuel source for your bodies and brain's energy. Carbohydrates are the Main source of energy that fuels your workouts.

- There are two key groups of carbohydrates that people need to differentiate within:
 1. Simple or sugary carbohydrates (**Bad carbs**)
 2. Complex and slower burning carbohydrates (**Good Carbs**)
- The other thing about carbohydrates is too many calories, of any type, can lead to fat gain. In the case of carbohydrates, people eat too many sugary carb foods, which also contains fat and it's true that you need carbohydrates for energy, you only limited amount of Bad carbohydrates.
- A bodybuilder / fitness enthusiast & Gym goer must have greatest knowledge of carbohydrates than the average person. Carbohydrates are the bodies preferred energy source, after ingesting, it turns into glucose, which fuels muscular contractions and glycogen, which gets stored in the muscles and liver for future use.
- Without storing enough carbohydrates in the muscles, you will lack the energy to train hard. Try to replace bad carbohydrates by good carbohydrates and as long as your carb intake doesn't overwhelm your energy needs, you do not to worry about fat gain from carbohydrate intake.

GOOD CARB EXAMPLES	WHY?	BAD CARB EXAMPLES	WHY?
• Fresh Fruits • Fresh Vegetables • Legumes • Beans • Peas • Lentils • Whole Grains • Brown Rice • Quinoa • Pure Oats • Pumpkin Seeds • Chia Seeds • Sunflower Seeds • Sweet Potatoes • Potatoes • Walnuts • Peanuts • Almonds • Macadamia Nuts • Hazelnuts	• High fiber • Natural Sugars • Low glycemic • Low insulin levels • Slow digestion • Prolonged energy • Keeps you full longer • Help with weight loss	• Fruit Juices • Soda or Pop • Cookies • Pastries • Cakes • White Bread • White Crackers • Regular Pasta • Chocolates and any other candy • Ice Cream • Frozen yogurt • Any other frozen sweet treat • Potato Chips • French Fries	• Low fiber • Refined/Processed • Fast Digestion • Hunger comes quicker • Energy levels deplete quicker • Added sugars • High insulin levels • High glycemic • Carbs convert into fat cells • Causes weight gain

FATS

Fats, technically called lipids, are the most energy dense of the three-macro nutrients. They are composed of building blocks called fatty acids, which fall into three main categories:

1. Saturated (Bad Fat)

It is found mainly in animal and dairy products, such as whole milk, cheese, beef, veal, lamb, pork and ham. You will also find this type of fat in some oils, such as coconut, palm kernel and vegetable shortening. Saturated fat is used by the liver to make cholesterol, which is involved in the production of hormones such as testosterone. This is important - you need some fat in your diet to keep your body's hormone production where it should be.

2. Polyunsaturated (Omega-3) (Good Fat)

It is found in corn, soybeans, safflower and sunflower oils. Some fish oils are also high in polyunsaturated fats. This type of fat may help lower total cholesterol though this includes good cholesterol, intake of polyunsaturated type of fats should be limited.

3. Monounsaturated (Omega-9) (Good Fat)

It is found in vegetable and nut oils, such as olive, peanut and canola. They can help lower LDL, or bad cholesterol without lowering HDL, or good cholesterol. Most foods are a combination of all 3 types of fatty acid; one is typically the dominant type, which therefore dictates its classification.

4. Trans Fats (Bad Fat)

It occurs when polyunsaturated oil is altered through hydrogenation, a process used to harden liquid vegetable oils into solid foods like margarine and shortening

GOOD VS BAD FATS

Good Fats	Bad Fats
MONOUNSATURATED FAT (OMEGA-9) Monounsaturated fats are liquid at room temperature and naturally occur in many foods.	TRANS FATS Most trans fats are artificially produced as a result of partial hydrogenation, which is process used to convert liquid oil to a solid.
POLYUNSATURATED FATS (OMEGA-3) Monounsaturated fats are liquid at room temperature and naturally occur in many foods.	SATURATED FATS Saturated fats are typically solid at room temperature and naturally occur in foods such as meat.

Summary:

Bad Fat intake should be kept low. In fact, many bodybuilders find that fat is naturally kept at low levels by simple eating "clean" - lean meat and dairy sources of protein, complex carbohydrates as listed. Some bodybuilders add an omega 3 fatty acid supplements to their diet to insure a source of healthy fat.

Thank you for spending your time, and hope we have been able to help you in understanding the essentials of nutrients, proteins, enzymes & Body Building

Unlike most brands, our philosophy is not to exploit maximum money from customers. We want to ensure maximum customer satisfaction and thus education is the first attempt to help all fitness enthusiast.

We are not convincing the customer to rely on protein supplementation Only. Our goal is to educate & enhance the reader's knowledge. The first step is to have a balanced diet. However, we are often not able to consume the required amount of protein through food with limited bad carbs and bad fat that is why the need for protein supplement arises.

By the help of this E-book we want you to take the correct amount of protein, we want you to know when and how to consume, we want you to help select the perfect protein for you. We want our customers to know everything before purchasing.

Moreover, we wanted to empower consumers with knowledge to be able to make choices for itself to know how to pair whey protein with BCAA, CREATINE, GLUTAMINE AND CASEIN. FISH OIL AND MULTIVITAMINS and the value of a balance diet as the mineral and vitamins, amplify the effect of protein.

Your Body is your Temple. You deserve the best knowledge to be able to buy the best product for best results!

SINew NUTRITION



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