

# Best Protein Powder of 2020: What's Best of ALL Proteins?

written by Mike Roberto | August 22, 2019

What's the **best protein powder** on the market?

Over the years, we've had the fortunate honor to test out over 100 different protein powders, and have brought it down to the top 5 proteins below. There's no better way to boost your protein intake and satisfy your sweet tooth than with these!

If you're *extremely* new to protein powders, feel free to skip down to our explanation of the types of protein powders.

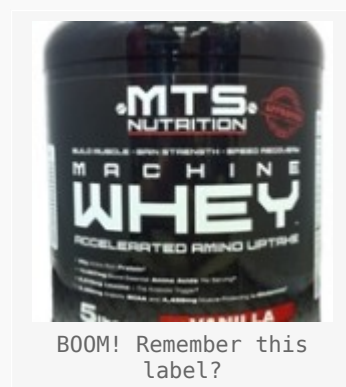
## Top 5 Protein Powders

Below are our overall **Top 5 Protein Powders**:

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### Current Version

This is v2.0 (Q3-2019) of this document. Last change made August 22, 2019.



## 5. MTS Nutrition Machine Whey Protein

Way back when Marc Lobliner started MTS Nutrition, he came firing out of the gates with a *protein*, which is not the norm in an industry full of pre workouts and fat burners. It obviously worked out incredibly well, and over time, the tastes have improved, while the macros have worsened as he loosened up on the "fun".

All of the Cookies & Cream style flavors here – including mint chocolate chip cookies & cream and peanut butter cookies & cream are simply to die for – if you can make them fit your diet!

**MTS Nutrition Machine Whey Protein – Deals and Price Drop Alerts**

## Get Price Alerts

Get Machine Whey Protein Price Alerts  
Get MTS Nutrition alerts  
Get Whey Protein price drops  
 Also get hot deal alerts

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### 4. NutraOne Protein Creations

The newcomer in 2019, these protein powders are downright insane!! The protein blend is open formula, and they have *inclusions* like cookie bits and sprinkles known as “gems”.

Some of the candy bar flavors are almost *too* strong, but of the two reviews shown below, *Cinnamon Square Cereal* and *S'Mores* are the two that blew us away:



This flavor has good chocolate base, but it's really all about the **S'Mores** flavor!

## NutraOne Protein Creations – Deals and Price Drop Alerts

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### 3. NutraBio Classic Whey... or 100% Whey Protein Isolate?!



This one was up for debate between Mike and Ben. Ben's all about NutraBio Classic Whey, which is a 100% WPC-80 (whey protein concentrate 80%), offering more smoothness and value. Mike loves the Breakfast Series flavors of 100% Whey Protein Isolate.

Either way, you can't go wrong, especially with the fully-disclosed labels (down to the amount of flavoring and sucralose) and third-party lab testing – all thanks to Mark Glazier, who has single-handedly moved the industry so far forward it's tough to imagine things without him!

#### NutraBio Classic Whey – Deals and Price Drop Alerts

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Get NutraBio alerts  
Get Whey Protein Concentrate price drops

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#### NutraBio 100% Whey Protein Isolate – Deals and Price Drop Alerts

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Get NutraBio alerts  
Get Whey

Protein Isolate price drops

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*Note: Below are our Classic Whey videos. If you want to see the numerous 100% Whey Protein Isolate videos, head over to the bottom of the 100% Whey Protein Isolate page.*

## 2. PScience Select Protein



This product is downright fantastic, and was easily the best new protein powder in the first half of the decade. Cookies and cream is way too underrated, most notably because Snickerdoodle has been stealing the show. Since we originally ranked it #1 years ago, so many new flavors have come out too!

The majority of this protein is going to come from casein-based protein, so

it's much thicker than the 100% Whey that you might be used to.

For every scoop, you get 24g of protein, 1.5g, and just 1 carb, making it both low-fat *and* low-carb.

Few other proteins are doing it as right as PEScience Select in keeping the protein-fat-carb ratio solid, the ingredients clean, the flavor high, and the texture thick. The seasonal flavors put it over the edge too!

## PEScience Select Protein – Deals and Price Drop Alerts


### Get Price Alerts

 Get Select Protein Price Alerts  
Get PEScience alerts  
Get Protein Powder price drops  
 Also get hot deal alerts  
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### 1. Ghost Whey



Advertisement for Ghost Whey protein powder. The image shows three tubs of protein powder against a blue background. The text "GAME CHANGER" is prominently displayed at the top. The tubs are labeled "GHOST WHEY" and "CHIPS AHOY!". Below the tubs, there is a logo for "GHOST x CHIPS AHOY!".

Greatest Protein Powder ever to hit the market? That's what Ryan Hughes said. Turns out we agreed

Few brands have come on as strong as **Ghost Lifestyle** the past few years! When they first came out with Ghost Whey, we were simply blown away by the taste of *Cereal Milk* – it was legit just like Cap’n Crunch cereal!! However, it was a “controversial” flavor since not everyone loved it like we did.

Ghost kept pounding away at the fully-disclosed whey protein blend, and the flavor that put it over the top was the collaboration between Ghost Whey and Nabisco’s Chips Ahoy! Simply uncanny!

Welcome to the #1 slot, Dan and Ryan and the team at Ghost. You deserve it for pushing the boundaries and bringing so much more *legitimacy* to this industry!

## Ghost Whey – Deals and Price Drop Alerts

### Get Price Alerts

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Thanks for reading our list – this concludes our Best Protein Powder guide. Below we discuss our criteria, and add more information for those looking to learn a bit more about protein.

### See our other Top 5 Lists

Don’t forget to check out our Best Pre Workout list! If you want more specific lists, see our Best Whey Protein Isolate list and Best Vegan Protein Powder list!

### Our Best Protein Powder Criteria

Your tastes may differ, but here’s our criteria:



- **Lactose sensitive**

Although not lactose intolerant, we're sometimes slightly sensitive. This means that products that aren't using lower-quality whey protein concentrates and are heavier with more whey protein isolates or whey protein concentrate 80% (WPC-80) are generally going to do better.

On this list, you'll see all **dairy-based** proteins because they bring the best taste/value mix.

If you want a 100% whey protein isolate, see our Best Whey Protein Isolate guide. If you want it *completely* dairy-free, see our Best Vegan Protein Powder list!

- We're **price sensitive**. This is *PricePLOW*, after all.

To be specific, we're looking at *grams of protein per dollar*, not "pounds" or "servings", since those can be manipulated.

- **Taste is important**, but if gets *too far* in the way of macros or the grams of protein per dollar, it won't fare as well.

- We're **fine with artificial sweeteners** *sucralose* and *acesulfame K*. If you're not, there are still a few alternatives provided. These sweeteners do *not* induce blood sugar responses like sugar or even sugar alcohol does[10-18] but if they're not paired with another macronutrient (fat if you're a low-carb dieter, or carbs if you're a low-fat dieter), your hunger may return sooner than you'd like.

- Major bonus points to any company that has allowed for **third-party lab testing** in order to prove that they are not engaging in amino acid spiking. Same goes for fully-disclosed protein blends.
- **Disclosure:** We've received free samples of nearly all products mentioned on this page, including several competitors not listed. We judge the products based upon the criteria above, and our opinions are never swayed by free samples.

## Disclaimer

In case you've never been on this site before, PricePlow is a price comparison site for supplements. Our goal is to send you to our lowest price on whatever product you choose to buy (often utilizing coupons).

We maintain affiliate relationships with nearly every brand on this page and are open to affiliations with any brand in the industry (all at a similar commission) to level the playing field.

## On supplement testing

We have access to lab tests on some, but not all of the protein powders listed on this page. Unfortunately, we cannot release them to the public or anyone else for that matter.

This has been a major concern since the amino acid spiking scandals and subsequent class action lawsuits have erupted earlier this decade.

So while we try to stick with the brands that are most trusted in the industry, we simply do not have test data on all supplements – it is an extremely expensive process.

## Feedback is appreciated

There are literally thousands of proteins out there, and obviously we can't try them all. If you have feedback, get in touch with us and leave a comment below.

## References

### Common Types of Protein Powder

In this section, we'll break down the various types of protein powders on the market. First we start with the *non-vegetarian* sources, so if you're a vegetarian, skip down to our *vegetarian protein powder* area.

If you're interested in the common *additives*, we also have a section for that. You can skip down to the *additives* section to read about those thickening



agents, emulsifiers, and other “fillers”.

- **Non-vegetarian Protein Powders**

While this category might sound rather strange, it’s far and away the most common category of protein powders on the market. Non-vegetarian (i.e. animal-based protein) sources encompass all the glorious whey, casein, milk, and beef protein powders you’ve been chugging since your high school lifting days.

But if you’re a vegetarian, you should skip down to the vegetarian protein section and skip the milk- and beef- based powders.

Here is a little bit more detailed info about all of your favorites:

- **Milk-Based Proteins**

The vast majority of animal-based proteins are derived from milk. No doubt you’ve been drinking the nutritious cow juice since childhood and still to this day. However, there’s more to the protein in milk than just the amount. There’s actually *different types* of protein contained within each glass of white or chocolatey goodness.

- **Milk Protein Concentrate / Milk Protein Isolate**

Milk protein actually contains two different types of protein, **whey** and **casein**. Milk typically contains 80% casein protein and 20% whey protein.[19]

The benefits to consuming milk protein powder is that it already has the advantage of being blend since it contains both forms of proteins, and gets the benefits of both This not only helps provide a better texture for the powder when mixed in liquid or yogurt (as the casein part is much thicker), but also gives it a sustained release in the body thanks to the casein as well.

However, you’ll rarely encounter a protein powder that is solely milk protein powder. More often than not, it’s included as part of the blend in various powders and will be listed as “milk protein concentrate”, or preferably, “milk protein isolate”. The milk protein isolate version will have the lactose removed from the powder (similar to how whey protein isolate is below).

- **Whey Protein**

Whey protein accounts for 20% of milk protein and is the most common and widely purchased type of protein on the market. Part of the reason is that it’s an incredibly affordable source of protein. The other, and more important, reason is that whey protein provides the full spectrum of all 9 essential amino acids required for building muscle and is rapidly absorbed by the body.[20]

Furthermore, it boasts one of this highest biological values (BV) of any type of protein a human could consume. Regular milk protein has a BV of 91, very respectable, and egg protein has a score of 100 (making it the “ideal” source of protein). However, when reviewing whey protein on its own isolated from milk, whey protein powder has a BV of 104![21]

Basically, there isn't a more bioavailable and readily absorbed protein by the body than whey protein. If you're physically active and trying to build muscle, you need and WANT this protein.

But not all whey is the same. There are several grades of it available, and it may make a *world* of difference to you:

### **Whey Protein Concentrate (WPC)**

It would be easy if there was only type or class of whey protein to purchase, but like most things in life, it's a tad more complicated. While you can just purchase a plain whey protein powder, if you look at the ingredients panel, it may list a few different kinds of whey protein.

Put simply, whey protein concentrate is the *lower-quality* form, but even that depends on the *grade* of whey concentrate used.

Whey protein concentrates (WPC) can range anywhere from 35-80% protein, with the remaining percentages composed of carbs (from lactose) and fats.[22]

Typically we like to see companies list the quality of their whey concentrates (such as PES Select Protein, which lists WPC-80 and is discussed in various places on this page. This shows you're getting the highest quality whey protein concentrate with less carbs and fats to take away from all the protein gains!

With all that said, whey concentrate is usually thicker and better-tasting than pure isolates, discussed next.

### **Doesn't specify the exact type of concentrate? Then buyer beware**

As a general rule of thumb, if you're getting whey protein concentrate, but the label doesn't tell you what *kind* of whey protein concentrate, then there's a very high chance you're getting the cheap stuff – likely 35-55% protein. What's in the other 45-65%? Anything from milk sugars (lactose) and other carbs to fats to impurities like ash or extra moisture.

So the main drawback to WPC is that users who don't tend to digest dairy all that well experience some GI upset or bloating from concentrates due to the higher lactose content. Don't worry though, if

you're one of these unfortunate souls, there are still other whey options for you to come.

### **Whey Protein Isolate (WPI)**

Whey Protein Isolates are a more "refined" source of whey protein, and a considerable step up in terms of protein content and digestibility. WPI have been processed to remove all carbs (lactose) and fats from the concentrate powder, as such, they must contain at least 90% protein. [22]

Compared to casein, isolates have been shown to significantly improve strength gain over its slower digesting counterpart.[23]

Put simply, **if you are lactose-sensitive or lactose intolerant, the only whey protein you should ever touch is a whey protein *isolate*.**

Those who are only lactose *sensitive*, but not completely full-blown lactose *intolerant*, could most likely get away with a product that has whey protein isolate as the first ingredient on the label (potentially followed by whey concentrate, milk protein concentrate, or casein protein after that).

### **Whey Protein Hydrolysate (Hydrolyzed Whey Protein)**

Hydrolysates represent the final "refinement" of whey proteins. Here, whey protein has basically been "predigested" or hydrolyzed. Basically, this takes the already rapid digestion rate of regular whey and cranks it up to 11.

The thinking behind using hydrolyzed whey is that the ultra-fast digestion would further improve muscle protein synthesis since it would flood the bloodstream with tons of essential amino acids faster than whey or casein, but looking at two studies that each compared whey and hydrolyzed whey to casein, the differences are negligible at best.[24,25]

Furthermore, since even more processing is needed to create hydrolyzed whey, it also means it's the most expensive of the whey options available. So, unless you absolutely can't tolerate whey concentrates or isolates then go for hydrolysates, but by this point it may be cheaper to invest in one of the alternate forms of protein powder.

The honest truth is that most athletes don't need to worry about getting such *super*-fast digestion. There isn't *that* much of a race to make this type of protein worthwhile. And to add to the extra cost, hydrolyzed whey typically tastes a lot worse and is tough to flavor.

## **So who *should* look at hydrolyzed whey protein?**

Those who have *severe* digestive issues or absorption issues will do well to look at whey protein hydrolysates. Anecdotally, this works far better for patients with diseases such as AIDS or certain forms of cancer, but if you have such an ailment, you should talk to your doctor about the best way of getting a boost of protein.

### **• Casein Protein**

Ever hear the phrase “curds and whey”? Well you know the whey... the slower-digesting casein comes from the *curds*![26]

Micellar casein, or casein, is the other 80% of protein contained in milk. While whey gets most of the spotlight for being the golden child of post-workout nutrition, casein protein deserves some love as well.

While whey is best thought of as a rapidly digesting protein, casein is the polar opposite – it makes for a far thicker and slower-digesting shake.[27] Casein protein powders are typically used by the “bros” as their last meal of the night to prevent their body from going catabolic while they sleep. The reason for this is that casein protein is very slowly broken down by stomach acids, providing a steady, controlled release of amino acids into the bloodstream.

In terms of post workout nutrition, whey usually gets the glory, but recent research has shown that casein is just as effective as whey in terms of boosting performance and decreasing body fat.[28]

Casein usually mixes us VERY thick in sludges and shakes and as such helps to give a fuller, more satiating “mouthfeel” to powders. Additionally, casein has been shown to be more filling as well compared to whey,[20] probably another reason many like to consume it before bed to kill off any midnight munchies that may hit them.

### **Casein vs. Whey?**

So what’s better, whey or casein?? The answer is **both** – there’s research showing that a milk protein concentrate or milk protein isolate that has both whey and casein brings the best of both worlds.[8,9] This is likely due to the higher quality amino acid profile of whey, but the slower digesting casein that makes the effects last longer.

### **• Beef Protein**

You would think beef would be a great source to use for protein, as it delivers a complete amino acid profile, including BCAAs, plus other muscle-builders like creatine and glutamine.[29,30]

But sadly, your beef protein powder likely *isn't* made from dehydrated, pulverized and filtered steak.

The vast majority of the beef isolate supplements on the market are made from the inferior protein source **collagen** to boost the protein content. You'll often find it labeled as "hydrolyzed gelatin" or involving other such gelatin-based label trickery.

This is the same gelatin that you'll see on a box of Jell-o that says "Not a significant source of protein" – something the FDA states manufacturers have to use because this is an incomplete protein:[31]

*"When the protein quality in a food as measured by the Protein Efficiency Ratio (PER) is less than 40 percent of the reference standard (casein) for a food represented or purported to be for infants, the statement "not a significant source of protein" shall be placed adjacent to the declaration of protein content."*

*– US Food and Drug Administration – Code of Federal Regulations (Title 21)[31]*

Basically, the manufacturers take gelatin, turn it into a powder, then "fortify" it with doses of BCAAs and creatine to make it resemble the real amino acid profile you'd find in a side of beef.

Long story short? Stay away from beef protein powders until further notice.

Beef protein supplements are, on average, complete and total garbage in our minds. There are much cheaper, and far more effective, options on the market that we simply can't justify wasting money on these products.

- **Egg Protein**

Eggs are nature's ideal source of protein. They rank #1 on the biological value ranking scale with a score of 100, meaning that the protein contained in eggs (particularly the whites) is an extremely bioavailable form of whole food protein on the market.[32]

Egg protein powders are made from egg whites that are dehydrated, pulverized, and processed into a fine powder that makes them perfect to add to smoothies, shakes, oats, pancakes, and much more (a high protein alfredo sauce perhaps?).

Furthermore, egg protein provides a great option to those who have dairy allergies and can't digest dairy, even the trace amounts included in isolates and hydrolysates.

### **The issue with egg protein powder**

The issue with *pure* egg protein powders is that they mix horribly and smell quite bad. So we personally prefer to just buy our egg whites and use them in various forms of cooking. If we see egg protein on a label, we normally hope that it's coming along with other types of protein powders.

## **• Vegan Protein Powders**

If you're here, then realize that you're part of a rapidly-growing movement, and several companies are doing their best to provide you with options that are not only well-rounded protein sources, but also tasty ones too!

Vegetarian proteins encompass all of those options that come from plant sources. These are the go-to options for vegetarians who avoid dairy products, those with dairy allergies, or vegans who eschew any and all animal products.

Their textures mix up rather thick and chalky at times, which can affect the taste, but they still contain loads of protein, which is ultimately what vegans and vegetarians need a *lot* more of to look aesthetically pleasing and possibly even keep general reproductive rates higher.[33]

## **• Rice Protein**

Many eschew plant proteins for lacking all of the essential amino acids in order to build muscle. However, rice protein contains *all* of the EAAs required by the body to facilitate muscle protein synthesis and get the anabolic engine running.

### **As effective as whey**

For those brosefs who bash plant proteins as not being as effective as whey in terms of muscle growth and recovery, research has proven this to be completely false.

A double-blind, placebo-controlled study comparing the effects of whey versus rice protein on markers of performance and lean mass gains. After 8 weeks of supplementation, rice protein was found to provide gains in lean body mass, strength, and power as well as decrease body fat comparable to whey protein.[34]

Additional research into rice protein has shown that it's also beneficial for lowering blood pressure and cholesterol.[35]

## • Pea Protein

As a vegetarian, hopefully this isn't your first time encountering pea protein. If it is, you can probably guess where pea protein comes from... the humble vegetable pea.

Like all the plant-based proteins you'll encounter pea proteins are a great alternative if you don't do dairy, either by choice or allergy. While you may think this puts you at a disadvantage compared to the moo juice crowd, nothing could be further from the truth.

When pea protein is compared to whey protein, pea proteins are just as effective as whey with resistance training on increasing muscle.[36] That's not all though, pea protein also helps fill you up and keep you that way as it's proven to be just as satiating as the ultra-slow digesting casein.[37]

Where pea proteins really shine though are in terms of overall health benefits. Research has shown that it lowers cholesterol and triglycerides.[38] Plus, pea protein lowers blood pressure and supports heart health. [39]

### **The glaring issue with pea protein**

The one downside to pea protein is that if you've ever had it on its own, it literally smells and tastes like peas. For this very reason, it's usually blended along rice protein and other plant-based proteins you'll find on the list to make a more pleasant tasting and smelling product.

The first company to cost-effectively fix the taste problem but keep the amino acid profile is going to be a *huge* winner in this industry.

## • Hemp Protein

Hemp seeds contains all nine essential amino acids required by the body to synthesize muscle along with a healthy dose of essential fatty acids, particularly omega 3 and 6.[40] As an added bonus for you conservationists out there, hemp is one of the most sustainable plants around, making it an ideal source to harvest for use in protein powders.

### **Not the best amino acid profile**

The first downside to hemp protein is that it's a little low in leucine, lysine and tryptophan. While that may not be a nail in the coffin for hemp, it also only has a mediocre protein digestibility rating (PDCAAS) of 48.[41] When compared to eggs with a score of 100, and whey with a 104, hemp just doesn't deliver in terms of maximizing bioavailability and protein synthesis.

### **Also even not the best form of omega-3**

Hemp protein powder manufacturers love to tout the high omega-3 content inside their products. And while that's there, there's a big "but" that goes along with those claims.

The issue with hemp protein's omega-3 content is that it's nearly all ALA, which is decent, but not even close to as beneficial as *DHA* – the omega-3 fatty acid chain with the most beneficial research behind it – and our bodies are awful at converting ALA to DHA too.[5,6,7]

This means that vegetarians counting on hemp protein to bring their omega-3 fats are getting the short end of that stick, and need to find other sources of diet. The best option is seriously to eat fish like the most healthy humans do, and "*a dietary (ie, food-based) approach to increasing omega-3 fatty acid intake is preferable*".[42] But if you refuse to do so, then you can consider algae-based DHA supplements.

### **Maybe it's a good value?**

But can the protein be cost-effectively separated from the other fats? At this point, it doesn't seem like it, as most hemp protein powders are high in fat and relatively low in protein, and provide a very low number of "grams of protein per dollar", a metric we use to find good deals on powders in general.

### **In conclusion: overrated**

Sure, it's great if it's part of a blend of proteins, but as your sole source of powdered protein, there are far better and cheaper options.

## **• Soy Protein**

Much a fuss has been made about soy proteins and whether or not they have a place in any bodybuilder or athlete's diet, particularly men. Initial reports on soy protein consumption had the masses believing that consuming any amounts of soy would lead to gynecomastia (man boobs) or the proliferation of estrogen in the body.[43]

However, more recent research into soy proteins show it to be a high-quality protein that contains all of the essential amino acids in the proper ratios needed to support muscle growth and strength development.[44,45]

Other studies have refuted the previous alarmism surrounding soy negatively impacting hormone levels in men and show that it has no effect on serum T level.[46]

Does this mean you should *only* eat soy protein and have no worries? Of course not. All this demonstrates is that if you happen to have some soy



isolate in your protein powder or bars, you won't see your T levels plummet or boobs grow out of control.

### **Additional Benefits of Soy Protein**

In case that's not enough to convince you, consumption of soy also has several other benefits to tag along with its muscle building perks. It can lower serum triglyceride and lipid levels, [47] Furthermore, soy also boasts a PDCAAS score of 100 making it just as bioavailable and well utilized by the body as whey and egg proteins![48]

### **Stop (totally) fearing the soy protein – a little bit per day is a good thing**

So the point being, if you eat a protein bar made from soy, or have a scoop of soy protein in a day, it's not a big deal. Just don't eat pounds and pounds of tofu and soy protein powder to be careful. But ~25g a day is going to provide far more benefits than side effects.

## **Common Protein Powder Additives**

Many consumers who are avid label-readers tend to dislike *too* many additives – but they're not all bad, nor are they all unnatural. Additives range from flavors to thickening / dispersion agents to texture agents (such as added fats / creamers) for a better "mouthfeel".

Some powders even contain artificial or natural colors, but those are ultimately completely unnecessary and can easily be avoided.

### **Pro-Tip: How to avoid too many additives in the top protein powders**

If you're interested in staying away from too many fillers, here's the trick when comparing proteins:

1. Look at the total serving size weight. For instance, 1 Scoop = 35g.
2. Look at the total number of grams of protein per serving. For instance, 1 serving yields 24g protein.
3. Divide the number in step (2) above by the number in step (1) above and you'll arrive at your **protein ratio**. In the example above, it'd be  $24/35 = 0.686 = 68.6\%$  protein by weight. Not terrible, but not the best either.

A popular protein that both tastes good *and* has a high "protein-to-powder ratio" is PES Select Protein, shown above in our Top 5 list.

Back to business – Below we discuss common additives to protein powders:

## • Thickeners, Emulsifiers, and Dispersion Agents

### • “Natural” Thickeners

#### • Guar Gum

Guar gum consists of ground reproductive tissue taken from guar beans. It's a very common shelf stabilizer that has been in use for decades and is extremely well-studied. It's a natural soluble fiber, and the only consistent health issue ever seen with it is some gas and bloating in those who have an existing digestive issue.[49]

#### • Soy lecithin

Soy lecithin is an ubiquitous additive in both food products and supplements these days, and that ubiquity has led to some controversy.

First, the basics – it's an emulsifier, or a substance that binds oil and water together. It's also a shelf stabilizer that not only extends the “use by” date on products, but also reduces sticky resistance in canned foods.[50]

For the purpose of supplements, however, it's most popular as a *surfactant* – it reduces the surface tension of liquids that are added to the mix, which helps to prevent clumping when mixed into a shaker.

#### **The soy lecithin controversy**

So what's the controversy? The legitimate concerns are more around the way it is processed than the direct effect it has on health.

Lecithin is a naturally-occurring substance found in a number of protein sources, including eggs and meat. Soybeans are the cheapest source to extract it from, however.

The concerns center around said *extraction* – pesticides used on the soybeans and chemical solvents used to extract the lecithin being chief among them. Those methods will vary greatly between products, of course, but you more often than not don't get access to that information.

There's also some mistaken conflation out there between soy lecithin and soy protein isolate. Some users still believe in potential health effects of soy protein isolate and are wary of using it, but they don't carry over to soy lecithin – they're two distinct products.[51]

Long story short – the small amounts of soy lecithin used in supplements are extremely unlikely to contain anything that can hurt you unless you have a soy allergy.

If you're concerned about the soybeans being genetically modified or

about pesticides, look for products that use organic lecithin.[52]

- **Carrageenan**

Carrageenan is an extract from edible seaweed that gels in water to increase viscosity in various food products. It's also a shelf stabilizer and binder.

There are some legitimate concerns about degraded carrageenan, or "*poligeenan*", as it appeared to cause intestinal tumors in a number of animal studies.

The FDA does not allow degraded carrageenan in food products, however, and a study of non-degraded carrageenan thus far has not shown any evidence of tumors, cancer or any other sort of negative health effects.[53]

Some people [reasonably] feel they should err on the side of caution and avoid it given that it's possible it could be degrading more on the shelf than the industry claims. That said, there's simply no hard evidence that there's any reason at all to worry about non-degraded carrageenan right now, or that it's degrading to dangerous levels in supplements or other food products.[54]

There are also plenty of protein powders on this page *without* carrageenan, so if you don't want it, you should follow through our guide at the top of this page and you'll get by just fine.

- **"Unnatural" Thickeners**

As you see, we put the word *unnatural* in quotes, since the naturalness of these ingredients can be debated.

- **Xanthan Gum**

Xanthan gum is a very common stabilizer/emulsifier/thickener that, according to all long-term animal studies done on it, passes harmlessly through the digestive system with no effect other than possibly softening stools from time to time.[55]

Many argue whether or not it's "*natural*" – it's at least *derived* from a natural substance, as it's produced by letting bacteria ferment a natural food source – in this case corn, soy, dairy or wheat are used.

### **Mostly harmless**

In the few human studies that have been done, some people's gut flora was unable to adapt to it and break it down, possibly causing some gas and bloating. But it otherwise passes harmlessly through the system and

is regarded as a safe additive by the FDA.[56]

### **Pregnant / Breastfeeding Women Beware!**

The one area to watch out for it is if you're a woman breastfeeding an infant or administering a formula that contains it. There is a lone study that was not conclusive, but raised the possibility that xanthan gum intake caused necrotizing enterocolitis in infants. While the amounts taken were much larger than you would get in most supplements, it's always best to err on the side of caution where deaths were involved.[57]

### • **Cellulose Gum**

Cellulose gum is an anti-clumping agent that keeps moisture out of the products that it's in. It's taken something of a beating in the media and the "natural foods" blogosphere because it's sometimes made up of miniscule bits of **wood pulp**, leading to sensationalist headlines about wood chips or sawdust being in food.

While it's true that it's sometimes made of wood pulp, it's also made from plants, and in all cases it's basically just an insoluble fiber that can be added to foods that don't normally have fiber in them. The wood pulp is basically identical to the plant pulp and is just as harmless and digestible. The FDA approves of its use and sets limits for how much can be in protein products like cheeses and meats.[58]

## • **Creamers / Texture Agents**

### • **Natural**

#### • **Coconut Oil**

Coconut oil is almost entirely made up of saturated fat, with only a relatively small proportion of monounsaturated and polyunsaturated fat. There's no protein in it.

People sometimes get it confused with MCT oil, which is the healthy saturated fat extracted from palm or coconut oil. The two are quite different – coconut oil is extremely calorie-dense and likely to raise bad (LDL) cholesterol when consumed regularly or in large amounts.

As a saturated fat (which means the carbon atoms are *fully bonded*, or saturated), it is extremely stable and non-reactive. This means that there are *far* less concerns of a protein powder with coconut oil or MCT oil going rancid if kept out or improperly stored too long (unlike with oils such as sunflower oil).[59]

- **Medium Chain Triglycerides**

As mentioned above, MCT oil is made from coconut oil, but it's quite different. It provides the same creamy mouthfeel and sense of satiation as a saturated fat does, but minus some of the taste and caloric density. It can be metabolized for immediate energy, and can even help the body *increase* fat oxidation and energy expenditure![60]

These are quite underrated fats, and many dieters like to use them. Being "relatively soluble in water",[60] they can help with the mouthfeel of the product, but cannot be too heavily relied upon. It has a lower smoke point than coconut oil, but has still been approved for use as a cooking oil,[61] although we're not typically worried about that in our protein powders.

- **Sunflower Oil**

Sunflower oil is composed of a mixture of the three major categories of fats – it's about 60% polyunsaturated fat, 30% monounsaturated fat and 10% saturated fat. It's still dense in calories (about 120 per tablespoon) and you don't want to overdo it on polyunsaturated fats.

The issue with polyunsaturated fats is that they are less stable by nature. When heated, sunflower oil breaks down (oxidizes) more than other polyunsaturated fats, and can lead to rancidity when the PV (peroxide values) get too high.[62]

There are some different compositions of sunflower oil that increase the amount of monounsaturated fat in proportion to polyunsaturated fat. These are labeled as mid-oleic and high oleic. Oleic acid is the source of the monounsaturated fat content.

**Best avoided in protein powders**

Sunflower oil is well-known for its stability issues, and a lot of research has been put into making it more stable and removing the odors.[63]

For our purposes, **we typically avoid protein powders with sunflower oil**, especially if they are expiring soon or we're not sure how well it was stored. It's simply not worth the risk of any rancidity when there are plenty of great protein powders on this page that *don't* use it.

- **Unnatural**

- **Corn Syrup Solids**

Corn syrup solids are made from dextrose, which is slightly less sweet than the sucrose or fructose more commonly found in food products. The caloric load isn't much different, however – about 12 calories per

teaspoon of dextrose versus about 15 for fructose and sucrose.

There is still some debate about the relative health dangers of different types of sugars, but there's no clear evidence to back any particular viewpoint as of yet. All we can say with certainty as of now is that it's all empty calories, corn syrup solids included. If you can fit food sweetened with it into your diet's macronutrient goals, it's probably no great harm, but it shouldn't be displacing needed nutrients.

In terms of the inclusion in protein powders, we don't see a purpose of having these around, but if they're buried deep in the formula and the overall carbohydrate load isn't too high, we're not going to be upset. We just don't want to pay for a tub full of carbs when buying protein.

- **Best protein powder *sweeteners***

- **"Natural" Sweeteners**

- **SUGAR and Fructose**

- As mentioned with corn syrup solids and maltodextrin, sugar (in all its forms) provides you with empty carbs that can immediately be burned for energy, but otherwise will just convert to stored body fat.

- Fructose is simply the naturally occurring form of sugar found in fruits, vegetables and honey. Traditional gym wisdom has held that the insulin spikes that empty carb loads bring on help improve protein synthesis, but studies to the contrary have been chipping away at that belief in recent years. The issue is that most studies compare carbohydrate+protein to just carbohydrate, but never carbohydrate+protein to just *protein* alone[80] – that's the well-performed study we'd like to see.

- There are theories that high sugar consumption is behind the spike in all sorts of diseases, including cancers and cardiovascular disease, but slam-dunk evidence is still lacking. Moderate sugar consumption that fits your macros is probably not going to hurt anything, but there's a wide variety of very good zero-calorie sweeteners available now that make things just as palatable as regular sugar does.[66]

- Sugar and Fructose in your Protein**

- With respect to inclusion in protein powders, this can be considered "natural", but in order to make most protein powders sweet enough, you really need a lot of sugar, and honestly prefer sucralose for our athletic and physique goals. We also typically don't like the taste of fructose, but that's subjective.

- **Stevia**

Stevia is an extract from the leaves of the *stevia rebaudiana* plant. It's considerably sweeter than sugar, doesn't spike insulin and is zero-calorie.

Recent studies indicate it may actually have all sorts of side health benefits – improving insulin sensitivity, reducing high blood pressure and even reducing arterial plaque among them.[67,68,69]

Still, there are some legitimate concerns about its effects on reproductive health, and women who are pregnant or trying to get pregnant may want to avoid it to be on the safe side (though evidence is limited to rat studies right now).[70]

### **Bitterness**

The biggest issue with stevia is that it's a bitter-sweet leaf. Over the last five years, companies have gotten better and better at refining this flavor, but it's still not as simple or easy to sweeten as using artificial sweeteners such as sucralose.

On the positive side, stevia has one of the cleanest bills of health of any artificial sweetener out there – it appears to not only be safe for use but might actually make you more healthy, at least if the results of initial studies hold up to further research!

### **Beware of additives when buying “stevia” at the store**

Note that this discussion is for *pure* stevia, however. Many “stevia” products you can buy on the store shelves are actually cut with all sorts of things, including maltodextrin (a caloric sweetener) and more controversial zero-cal sweeteners. It's very important to check the label and make sure getting nothing but stevia, and maybe some added insoluble fiber if you want it.

So even though a packet of “stevia sweetener” with maltodextrin or sugar alcohols may say zero-calorie, there's a chance you're actually getting a few calories, they're just less than 0.5g, so it's not technically to be labeled as a carbohydrate. Splitting hairs really, but just beware that many of those “calorie-free sweeteners” aren't *truly* calorie-free if there's caloric stuff in there!

- **Lo Han Guo**

Lo Han Guo (or Kuo) is an extract from **monk fruit**. In the United States this sweetener is not very common, and usually on the pricey side when you do see it sold. Like stevia, it's zero-calorie and does not spike insulin levels. It appears to have a positive effect on blood cholesterol levels, but the extract (which is subject to a fair amount

of processing) isn't all that well-studied as of yet.[72]

- **Sugar Alcohols**

Sugar alcohols are about the most inappropriately named substance there is, since **they are neither a sugar nor alcohol!**

That's a good thing, though, as they don't contribute calories to the diet or rot teeth the way sugar does, nor do they have any of the caloric load or intoxicating effects of alcohol. They don't spike insulin either, and they're actually usually significantly less sweet than artificial sweeteners.

There are a wide range of sugar alcohols. Some of the more instantly recognizable names are *xylitol*, *erythritol* and *sorbitol*.

The main knock against them is that certain types have really individualized interactions with people's gut flora. Some types can cause serious gastric distress in some people, but it's almost impossible to predict who will be affected until they try them. Erythritol and xylitol seem to be the most widely well-tolerated of the bunch, which is probably why you see them so often.[72]

- **Artificial Sweeteners**

- **Sucralose**

Sucralose is a super-sweet, non-caloric sugar substitute. The biggest brand name it's sold under is Splenda, but there are a variety of others. As with the other artificial sweeteners and sugar substitutes, it doesn't spike insulin either.

Sucralose may be listed as "low calorie" if it has caloric fillers such as dextrose or maltodextrin. It's becoming increasingly popular in food products, with Pepsi switching all of its diet drinks over to it from aspartame in mid-2015.

You'll see dire warnings about it pop out from the more fringe of the alternative health / medicine scene, but sucralose is actually one of the most well-studied sugar substitutes there is, and all evidence to present is that it's safe to use.[73]

- **The king of protein powder sweeteners**

This is by far the most popular sweetener in protein powders, and we enjoy it and fully support its use until further noted. For nearly all people, there don't seem to be any cons to using it, yet there are plenty of pros.



- **Aspartame**

Aspartame is most commonly known under the brand names NutraSweet and Equal. Like sucralose, it's been thoroughly studied since the 1970s and is thought to be safe, although there are *several* people who will argue with that assertion.

It's starting to lose ground to sucralose because it can't be heated without losing its sweetness and only lasts for about half as long on the shelf, but it's still a commonly used sugar substitute.[74]

**Never / rarely used in protein**

Yet in protein powder, it's *completely* lost ground to sucralose. We can't think of a single protein powder in existence that contains aspartame (although there are likely a few).

For the simple reason that the supplement industry has completely avoided aspartame, we simply stay away from the whole aspartame argument. It simply doesn't affect us due to its near-zero usage rates here.

- **Acesulfame Potassium (Ace K)**

Ace K is roughly as sweet as aspartame, but it's relatively rare to see it as a lone sweetener in any product. It has a slightly bitter aftertaste that is usually masked by combining it with aspartame or sucralose.

Some concerns have been raised about it being cytotoxic in mice at very high doses,[75] but rat studies have not shown any evidence of this and the FDA considers it safe for use.[76]

- **Maltodextrin**

At one time maltodextrin was recommended in bodybuilding circles as the go-to simple carb source for bulking, but it seems to have fallen out of general favor as of late. Although *labeled* as a "non-sugar carb", it's really a simple sugar derived from corn. There's really no special harm to it as compared to other sugars.

But like other sugars, it's basically empty calories, and products that use it as a sweetener tend to pile it in because it's really cheap and wastes space in the tub of protein (that could be better used for actual *protein powder!*)

Recent studies have busted the longtime gym bro-science belief that insulin spikes improve protein synthesis, so piling on maltodextrin after a workout really just means you're piling on simple carb weight.[64,65] There's still a lot of debate over whether simple carbs

actually are a good option for gains, but it's undeniable that maltodextrin has no real nutritional value.

### **Completely unnecessary in your protein powder**

Regardless of the above debates, we typically don't recommend powders with maltodextrin anywhere high up on the label. This is nothing more than wasted space – after all, we're paying for *protein*, not carbs. It's also cheap filler in most weight gainers.

Remember, 2lbs of protein isn't always *two pounds of protein!* Read the label and remember to calculate how many grams of protein \*per dollar\* you're getting, just like we do on our supplement deals page.

- **Polydextrose**

Polydextrose is unique among the sugar substitutes as it is a man-made type of glucose, but also a soluble and prebiotic fiber. It's typically been used in products for diabetics but is finding its way into more general food products and protein powders.

While a sugar that also acts as a healthy dietary fiber sounds amazing (and can actually reduce appetite![77]), there's one big problem with polydextrose – many people have serious issues digesting it and get major gas and bloating from it.[78]

- **Flavors**

- **Cocoa**

Undoubtedly you've seen Willy Wonka at some point and are well aware that the cocoa bean is ultimately responsible for chocolate. Chocolate-flavored supplements usually use cocoa powder or extract, which is typically rather bitter in taste. The unhealthy component of chocolate actually comes from the sugar and saturated fat that the cocoa is mixed with; in supplements, chocolate flavor is usually replicated in a more healthy way by using one of the zero-calorie sweeteners listed above.

There are actually several beneficial flavonols in cocoa, such as epicatechin,[79] but we're never sure how much of anything is in chocolate protein powders. It's probably negligible, but cocoa (without the added sugar and fat) is definitely not a bad thing.

- **Vanilla**

Like cocoa, vanilla is another bean extract that does not taste palatable at all in its natural form, and has to be added to a recipe containing a sweetener to become delicious. As with cocoa, flavored protein powders and

other supplement products will usually mix their vanilla extract with some sort of zero-calorie sweetener.

## • Salt

When a product claims that it has “electrolytes”, that primarily means it has salt and potassium. While overconsumption of salt is thought to be bad for health, you do need to take in some amount each day as a dietary necessity.

One of salt’s chief roles is to maintain internal pH balance so that the electrical signals that direct our movements can transmit properly, and when you sweat you lose a lot of salt, so it needs to be replenished during and after workouts.

Seeing salt low in a protein powder’s list of ingredients is never a big issue. Sometimes it helps balance the flavor quite well.

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