The Incredible, Amazing, Most Wonderful Seven Step Guide to Comparing and Buying Enzyme Products

Seven parts to navigating the world of digestive enzyme supplements. This guide outlines the steps and processes to take in reading product labels, matching enzymes to food types, and what to look for in a digestive enzyme product.

Part 1. Why are you considering enzymes?
Select an enzyme product based on the results you want to achieve. Think about the food groups you want the enzymes to break down, and then pick a product that contains the proper enzymes. Products are usually a mixture of enzymes, not just one type. You may need to choose more than one product to cover all the foods you need to break down. Sometimes you may have another goal besides food breakdown. Examples are using a high protease enzyme product to take between meals for inflammation, gut healing, and blood cleansing, or one with a high level of cellulase to help with yeast overgrowth. Skip right through all the advertising and marketing fluff. Note what end results you want to see and use that to make your decision. You can get some helpful information from a company but be sure to compare this information with other sources as well.

Part 2. What types of enzymes are in the product?
Source of enzymes
All digestive enzymes come from two living sources: plants or animals. The plant group includes both those enzymes derived from plant sources (pineapple, papaya, kiwi) and microbial (fungal) sources. In general, plant enzymes are preferable when possible. They offer several advantages over enzymes from animal sources. Plant and microbial enzymes are much more effective in the pH and temperature ranges of the body.

Our pancreas, when working properly, secretes a number of enzymes to digest food as it enters the small intestine. But as we age, or in some disease states, this enzyme secretion may not be adequate to completely digest the food we eat. This can result in pain, cramping, excessive gas, certain food intolerances, and inflammation. Pancreatic enzymes are available by prescription (Creon, Viokase) or over the counter. However, pancreatic enzymes are not stable to the acid conditions found in the stomach, so a good portion of them may be destroyed unless the preparation is treated in such a way, like being enterically coated, so that the enzymes will not be released until they arrive in the small intestine.

Plant and microbial enzymes, however, are stable in acidic conditions. They help digest the cooked and raw foods in the higher pH of the upper part of the stomach, the acidic lower part of the stomach as well as in the alkaline intestines. Digestion in the upper stomach actually mimics the natural process of eating raw foods, which contain some amount of the enzymes needed to break down the food itself. The additional ‘pre-digestion’ provided by plant and microbial enzymes leaves the pancreas to provide the

‘finishing touches’ to the digestive process in a less stressful manner. The intestinal tract will be better able to absorb and assimilate the nutrients and vitamins in the meal.
Is an all in one enzyme product better or a speciality product with only a few different types of enzymes?

There are advantages and disadvantages to each strategy and which is ‘best’ will depend on the individual situation and particular product. Here are some considerations.

‘Everything’ product – A comprehensive product alleviates the need to think about which enzymes go with which foods, so it may be easier to give just one thing. You can take it for overall digestion whenever you eat. However there are dozens of products claiming to be ‘the ultimate’ or ‘most comprehensive’ enzyme product, using very different amounts of different enzymes. Consider any blanket statements like this to be marketing jargon.
Product Toleration – Some people cannot tolerate certain enzymes for a variety of reasons. Having separate formulations allows many more people to enjoy the benefits of enzymes because they can eliminate the enzymes they do not tolerate. Having everything in one capsule makes it an ‘all or nothing’ deal. If someone reacts negatively to a formulation, and all the enzymes are lumped together, there is no way for the person to fine-tune it, or figure out what is the problem.

Specialized need – If you take a complete product while attempting to get the benefits of just one or two types of enzymes, you may have to take much more product which makes this much more expensive. Targeting specific needs may be more efficient and cheaper. Calculate the cost per capsule and per dose for what you need. There is also the basic issue of volume or bulk in enzymes. There is only so much room in a capsule so the all-in-one product may require you to take more capsules just to get adequate amounts of the basic types of enzymes. A person with celiac may want a product that is low in proteases overall. You may want particular enzymes just for yeast control. If you are on a diet that contains high fat, you would probably be better off with a special product with a much higher level of lipase enzymes than most products contain (Lypo from Enzymedica is an example). Some people cannot tolerate the fruit-derived enzymes, whereas others specifically want bromelain or papain to help with inflammation. A few have reported taking a a strong protease product to quelch a migraine or cold. Wobenzyme N is all proteases and very popular for immune system support.

Proteases separately – Giving proteases separately has proven to be very beneficial for many people. Since the proteases are doing many other types of healing work in the body, this provides advantages and disadvantages. The advantages include fighting pathogens, eliminating waste and toxins, immune support, etc. We have noticed that sometimes if there is a negative initial reaction to enzymes, this can be minimized by giving proteases separately and going slower with them, where as this does not seem to be a factor with other enzymes. Many parents have found that being able to dose a strong protease product separately from the other enzymes has made enzyme therapy successful for them. They can use a broad spectrum product lower in proteases first for a couple of weeks to promote gut healing gently and then introduce the stronger proteases. For those with yeast, die-off may be slower and more tolerable. Someone with a severely injured

gut can give the proteases slower until the gut is sufficiently healed without having to give up the benefits of other enzymes. This strategy may actually speed up gut healing as well.

Number of enzymes – You will notice that many very good enzyme products do not have every enzyme known to man in them. Having one of everything is not really necessary with enzymes. It may be helpful for some people depending on their physiology and diet, but many people just need ample supplies of the basic ones. Too many different types of proteases may start to cancel each other out. Also, certain combinations of enzymes have synergistic benefits that are not seen if given separately or not in the appropriate combination. This is the 'art' and science of making targeted products.

Part 3. Look closely at the amount of activity of the enzymes

Enzyme strength is measured in terms of activity. Enzymes may be present, but unless they are functional, they will not do any good. While most food, supplement, and drug comparisons use weight (such as milligrams), the most important measurement with enzymes is the activity and potency of the enzyme. A product label should list enzyme strength in standard activity units rather than by weight. To measure activity of digestive enzymes, tests or assays determine the quantity of digestion that occurs under specific conditions. This activity depends on concentration, quantity, pH, temperature, and substrate.

When you review the labeling on a digestive enzyme package, look for Food Chemical Codex (FCC) units. This labeling certifies that the enzymes went through thorough testing for activity and potency. The American food industry accepts these units as set forth by the National Academy of Sciences. Some companies promoting enzymes list measurements based on dosage, weights such as milligrams (mg), or a other things. Weight, dosage, and any other units do not give any information on enzyme activity – 220 mg per capsule does not tell anything about enzyme activity. You may have 220 mg of nothing, or 10 percent activity or 90 percent activity. FCC labeling is the only national standard for the evaluation of activity and potency of enzymes in the United States. If the product you are interested in only gives weight in milligrams or in units you do not understand, you can call the company and ask about the specific ingredients and activities.

The higher the activity number, the quicker the food is digested. A lower number will still be digesting food, but it will take longer. Since enzymes do not get used up in the process, we do not 'run out' of enzymes before all the food is digested, BUT the stomach and intestines are absorbing food, completely broken down or not, at the same time. Since we are 'on the clock,' with possible unbroken-down peptides (or other food components) being absorbed, we want the food to be digested by the enzymes before it gets absorbed in a partially broken-down state.

FCC labeling example: If Product # 1 has 15,000 HUT of protease and Product # 2 has 45,000 HUT of protease. Product #2 can break down three times more protein than

product # 1 in a given period of time. This is how to compare digestive enzyme activity and formulations. Part 4. Compare pricing – Calculating cost comparisons

Once you have picked a product that contains the enzymes you need to meet your goals, and you see that the label lists certified activity units, you have several ways to further compare products.

What is the cost per capsule?

To find out what the cost per capsule is, first find out how many capsules are in the bottle from the label. Capsules are better because the process of making tablets is hard on enzyme integrity or activity. Write this number down as Number of Capsules per Bottle. Next, add the price for the bottle, any extra discounts, taxes, and/or shipping charges to find the Total Cost per Bottle. Now divide the Total Cost per Number of Capsules. This gives you the Cost per Capsule.

What is the activity per capsule?

Sometimes it is helpful to compare products by activity per capsule. The product label may already list the activity per capsule. You always want to buy a product that lists the ingredients by acceptable units for activity, not by weight (such as in milligrams – mg). Weight tells you nothing. You can have 100 mg in an enzyme capsule but if it has zero activity, it is worthless to you. 100 mg may contain 5 units of activity or 500,000 units of activity. You can only compare values for activity if the units are identical. FCCLU is not the same as LU.

If the units are not identical, you need to find the conversion factor to get them into similar units. If the units are not identical and there is no conversion factor, you cannot make a side-by-side comparison and will need to look at other factors.

The U.S. Pharmacopeia (USP) helped by establishing a standard for the pancreatic enzymes (animal-derived) by which you can compare other enzyme supplements, such as plant- and microbial-derived. This standard is called ‘X’ and contains an equivalent of:

25 USP units of amylase,
2 USP units of lipase, and
25 USP units of proteolytic enzymes

If a supplement contains 5X pancreatic enzymes, it would provide five times the amount of each of the enzymes in this standard, or 125 USP amylase, 10 USP lipase, and 123 USP protease. There is no direct conversion between USP units and FCC units, because they are produced from different sources, using different methods.

How many capsules will you need to take?

Compare the activity per capsule along with how many capsules you will need to take. Some products say one capsule per mea, other say 4 or more. That can make quite a difference when buying.

Not many products are sold as straight enzyme powder because constantly exposing the powder to air can drop the activity level. So the first doses may have a much higher activity than the powder nearer the bottom of the container by the time you actually get around to using it. Generally, one capsule's worth of enzymes equals about one-eighth teaspoon.

ALWAYS check how many capsules count as ‘one serving’ or ‘one dose.’ Just looking at the list of ingredients and the amount of activity on a label and automatically thinking it is for one capsule is very easy to do. Marketing departments know this too. It may look like you are getting a lot of enzyme activity per serving, however the serving size may be more than one capsule. This is a common practice for many dietary supplements, not just digestive enzymes. Also, note how many capsules per bottle. Usually for enzymes, capsules come in increments of 60, 90, or 120.

Cost comparisons may look something like this:

from Company A:
24.4 Prozyme Protein
21.1 Prozyme All-purpose (contains some protease)
____
45.5 cents total using 2 capsules for all food groups
from Company B:
24.4 Digestase Alpha-protein
19.1 Digestase Beta-carbs
____
43.5 cents total using 2 capsules, but have no enzymes for fats and sugars
from Company C:
30.0 Foodase Proteins and Sugars
27.8 Foodase Fats
25.0 Foodase Starches
____
82.8 cents total using 3 capsules for all food groups

You can mix and match enzyme products, so you do not have to buy everything from one company. Check to see that all the products you are considering use a very high standard of manufacturing methods and quality control. All products should use quality ingredients, including sulfite-free papain or a manufacturing method that does not require sulfite. This will not necessarily be listed on the label, so double-check from others or the manufacturer. You may want to note if products come packaged in gelatin capsules (animal based) or veggie capsules (vegetable based), if this is a concern for you.

You will also need to factor in individual responses. Any individual may have a better reaction to one formulation, but not another for some unidentifiable reason. Nothing in a real laboratory, or what other people with similar symptoms say, can always predict how any individual will respond.

Part 5. What other stuff is in the product besides enzymes?

You will also need to check for any additives, fillers, binders, or other ingredients that are in the product besides enzymes. You will have to decide if you need these extras at all, or want to pay for them, or if they may cause an adverse reaction. Possible items are:

- probiotics - usually probiotics in an enzyme supplements may be a nice-to-have but are not sufficient to replace a 'good' or 'strong' probiotic
- vitamins
- minerals that may help deliver or transport enzymes (calcium ascorbate, magnesium citrate, zinc or manganese gluconate)
- amino acids
- other stuff - herbs (such as aloe vera powder, ginger root), whole foods, gelatin, additives, preservatives, colorings, dairy, soy, yeast, gluten, sugar, salt, corn, wheat, or hydrogenated oils
- potential allergens or food intolerances
- ionic minerals – these minerals may help the digestive enzymes become two to three times more active and effective

Part 6. Research the product and manufacturer

This is always a good idea. Call the company or manufacturer and get answers directly. Keep in mind that a company will usually want to paint their products in the best light possible. Usually on health issues, they will not deceive you or lie, although this is not guaranteed and does happen. Most probably, they may not be forthcoming in giving you all the information you need if that information may dissuade you from purchasing their products. Bluntly ask them to explain why you should buy their product over a competitor’s product. This is not being pushy; it is being practical. People who are proud of their work are very happy to talk about it. If their products do not list FCC units, ask for the corresponding values. Have them explain it to your satisfaction. Be cautious about extra things in the formulation that you do not necessarily want to pay for.

Then go to one of the best sources available for information: Ask others if they have any experience with the products. Ask about side-effects and interactions. Find other individuals that have symptoms or a condition similar to your situation. Although parents and other adults have their preferences, they are usually very honest about that. Asking several individuals will give you a much better idea of general satisfaction with the product. In the end, you are paying for it and your family will be using it. Many issues surround the quality of enzymes. Ask about handling, storing, and packaging of enzymes because these all affect enzyme activity. We are interested in the activity of the enzyme as we ingest it, not as it leaves the factory.

Part 7. Understanding enzyme names and activity

Enzymes usually have the ending ‘ase.’ Usually, the first part of the name tells something about what the enzyme is working on. A protease would be an enzyme (ase) that works on a protein (prote). A lipase would be an enzyme (ase) that works on lipids (lipids means fat, so this enzyme breaks down fats). Pectase is an enzyme (ase) that works on pectins (a compound found in some fruits such as apples).

Protease is a broad term referring to any enzyme that breaks down proteins. In the enzyme business, almost all enzymes from microbial/fungal organisms are actually mixtures (or blends) of many different enzymes. For example, you can get a number of ‘proteases’ available from enzyme brokers with names such as ‘protease 3.0’, ‘alkaline protease’, ‘acid-stable protease’, or ‘protease 4.5’. The enzyme blend called protease 3.0 may also contain amylase, pectinase, and a variety of different peptidases. However, the supplier only certifies that blend for units of protease 3.0 which has certain characteristics that make it different from other of the supplier’s proteases. These characteristics may refer to a number of things, including its optimum pH or particular affinity to specific substrates.

There are a few main companies in the United States that produce core basic enzymes. People making formulations buy what they want, similar to buying ingredients from the store and then cooking something special from them. Okay, let’s say a manufacturer purchases three blends of a supplier’s proteases, such as ‘A’, ‘B’, and ‘C.’ Then he mixes two parts of A with six parts of B. Now the manufacturer has a ‘distinct and proprietary’ blend, which he decides to call ‘Ultrazymase’ and puts it on his label so that other sneaky manufacturers cannot copy his remarkable formula. The problem is, how do you then convey the activity of Ultrazymase? This explains why sometimes you do not get an exact ingredient list – because it is the proprietary information of the enzyme formulator. Or it may contain a proprietary blend from the original supplier, which even the formulator does not know exactly, or is not at liberty to disclose. It also explains why you may see a name that sounds like an enzyme because it ends in –ase, but you cannot find it in any research book or with a search engine on the Internet. These are usually the created names of proprietary blends.

It may seem logical to add as many different proteases in a product as possible to get the widest amount of proteins broken down; however, going with, say, more than three or four different proteases may probably be the optimal number of different proteases, and may do as much protein breakdown as having smaller amounts of six or seven proteases.