PIVOTAL HEALTH

SERRACOR-NK® (SEBkinase®)

What is the definition of a systemic enzyme?

An enzyme formulation made up of one or more systemic enzyme (serrapeptase, nattokinase, chymotrypsin) along with a digestive enzyme blend to be used as co enzymes to help the absorption of systemic enzymes to be more effective.

Digestive Enzymes vs. Systemic Enzymes
Digestive enzymes conduct their actions in the stomach to digest food while systemic enzymes are enterically coated to prevent contact with the stomach acid. This way they pass through the stomach into the intestines where they are absorbed by the body.

The primary function of systemic enzymes
Systemic enzymes fight inflammation, fibrosis (scar tissue), and viruses; modulate the immune system; and cleanse the blood.

What are the different Systemic Enzyme Ingredients?

Proteolytic Enzyme (Protease)
The term "proteolytic" refers to all enzymes that digest protein. Other classes of enzymes include Amylase, a digestive enzyme that breaks down carbohydrates, and Lipase, a digestive enzyme that breaks down fat during the digestive process. Each of these enzymes helps in the digestion of food, which in turn helps with absorption of those essential nutrients in the diet. In the body, proteolytic digestive enzymes are produced in the pancreas, but supplemental forms of enzymes may come from fungal or bacterial sources, extraction from the pancreas of livestock animals (trypsin/chymotrypsin) or extraction from plants (such as papain from the papaya and Bromelain from pineapples). The primary uses of proteolytic enzymes in dietary supplements are used as digestive enzymes, anti-inflammatory agents, and pain relievers.

There are a number of clinical trials showing the benefit of using oral proteolytic enzymes as a digestive aid. Proteolytic enzymes are also theorized to help reduce symptoms of food allergies, and as a treatment for rheumatoid arthritis and other autoimmune diseases.

Perhaps the strongest evidence for benefits of proteolytic enzyme supplements come from numerous European studies showing various enzyme blends to be effective in accelerating recovery from exercise and injury in sportsmen as well as tissue repair in patients following surgery. In one study of footballers suffering from ankle injuries, proteolytic enzyme

supplements accelerated healing and got players back on the field about 50% faster than athletes assigned to receive a placebo tablet. 1 A handful of other small trials in athletes have shown enzymes can help reduce inflammation, speed healing of bruises and other tissue injuries (including fractures), and reduce overall recovery time when compared to athletes taking a placebo. 2-3 In patients recovering from facial and various reconstructive surgeries, treatment with proteolytic enzymes significantly reduced swelling, bruising and stiffness compared to placebo groups. 9-11

Serrapeptase

Serrapeptase, also known as Serratia peptidase, is a proteolytic enzyme isolated from the non-pathogenic enterobacteria Serratia E15. The enzyme is found naturally in the intestine of the silkworm, which is used by the silkworm to dissolve the cocoon and emerge as a moth. When consumed in unprotected tablets or capsules, the enzyme is destroyed by acid in the stomach. When not enterically coated, the enzyme is destroyed by acid in the stomach. However, when enterically coated, the enzyme passes through the stomach unchanged and can be absorbed by the intestine.

It has many clinical uses, including as an anti-inflammatory agent (particularly for post traumatic swelling), for fibrocystic breast disease, and for bronchitis (serrapeptase loosens and expels mucous).

Serrapeptase digests dead tissue, blood clots, cysts, and arterial plaque. The late German physician Dr. Hans Nieper used serrapeptase to treat arterial blockage in his coronary patients. Clinical studies show that serrapeptase induces fibrinolytic, anti-inflammatory and anti-edemic (prevents swelling and fluid retention) activity in a number of tissues, and that its anti-inflammatory effects are superior to other proteolytic enzymes. 12 Besides reducing inflammation, one of serrapeptase's most profound benefits is reduction of pain, due to its ability to block the release of pain-inducing amines from inflamed tissues. 13 Physicians throughout Europe and Asia have recognized the anti-inflammatory and pain-blocking benefits of this naturally occurring substance, and are using it in treatment as an alternative to salicylates, ibuprofen, and other NSAIDS. 14

Bromelain and Papain

Both Bromelain and Papain are plant-derived proteolytic enzymes. Bromelain, also known as bromelian, is a protein-digesting enzyme extracted from the flesh and stem of the pineapple plant, Ananas Comosus. Papain is a proteolytic enzyme isolated from the papaya plant, Carica Papaya. Bromelain is most notable for its effectiveness in the reduction of inflammation and decreasing swelling, but the scope of its benefits continues to increase. As a natural anti-inflammatory enzyme, bromelain has many uses. Arthritis patients may reduce the swelling that causes joint pain by taking bromelain. Bromelain may also be helpful for the pain, numbness, tingling, aching and loss of motor and sensory function in the fingers resulting from carpal tunnel syndrome (CTS). 15, 16 Prevention of the adhesiveness of platelets to endothelial cell walls was

accomplished with 0.1 mcg/ml of Bromelain. 16a Thus, the benefits of bromelain occurs over a broad range of doses, and even small amounts may be beneficial to anyone at risk to thrombotic heart attack or stroke. Papain has been shown to be effective in preventing burn wound infection and helping remove dead cells. 17

Papain is also used for defibrinating wounds in hospitals, preventing cornea scar deformation, treating jellyfish and insect stings, treating edemas and inflammatory processes, accelerating wound healing, for indigestion, dissolving membranes in diphtheria, treating ulcers, and to reduce fever, swelling and adhesions after surgery.

Amla

Also known as Indian gooseberry (Emblica officinalis) is the richest source of Vitamin C. The Vitamin C in Amla is from the Rutin family, and there is about 50 mg per System Enzyme capsule. It also contains tannic acid, glucose, protein, cellulose and Calcium. Amla is useful for stomach problems; it is antipyretic, hair tonic and nerve brain tonic. It is also useful in anemia, hyperacidity and in gynecological problems and epistaxis. Amla is considered to have restorative and preventative properties.

Rutin

Rutin is one of the many existing Flavonoids, which are a class of water-soluble plant pigments. Flavonoids support health by strengthening capillaries and other connective tissue, and some function as anti-inflammatory, antihistaminic, and antiviral agents. Rutin and several other flavonoids may also protect blood vessels. Rutin was shown to stimulate wound healing in rats and augment the tensile strength of scar tissue significantly. 18

What are the differences between the systemic enzyme formulas on the market today?

There are many differences between the formulas being sold today. To start you need to find out if you are taking a formula that is from animal source enzymes (Chymo-trypsin) or non-animal source (serrapeptase, nattokinase) many people feel that that non-animal source enzyme formulas are not only a healthier choice but are more highly effective and can deal with many different health conditions.

The second thing you must always ask and be sure to check into is that your systemic enzymes are enterically coated.

What is Enteric Coating and how does it work?

Enteric/delayed release coatings consist of pH sensitive polymers, which means the coating remains intact in the acidic environment of the stomach and then solubilizes in the more alkaline environment of the small intestine. Enteric protection for solid oral dosage forms is required to prevent gastric mucosal irritation, to protect a drug which is unstable in gastric fluids or to delay release for local delivery in the intestine.

Why your systemic enzymes need to be enterically coated?

Vitamin absorption is a very crucial aspect to consider when evaluating supplements. Absorption, known technically as bioavailability, can and does vary significantly from supplement to supplement. Please keep that in mind if you are a consumer who buys according to price.

These days the term "vitamin absorption" is commonly used to refer to not only absorption of vitamins but of other nutrients/ingredients as well. So, I have used it in this sense in the discussion below.

If you haven't already read bioavailability of nutritional supplements I recommend that you read it now so that today's article makes more sense.

Enteric coating is essential for high quality supplements containing expensive and highly efficious ingredients like L-Glutathione, enzymes, SAMe and herbal extracts. This special aqueous based coating offers an optimal delivery system ensuring higher levels of vitamin absorption.

Although enteric coating is a common technology employed with expensive pharmaceutical medications, it is rarely seen in the nutritional supplement industry!

That's because most supplements are manufactured to a price rather than from a 'best science' perspective. Pharmaceuticals always work because they must be based on 'best science' since FDA regulations require proof that they work.

Some experts believe that (in non enteric coated products) the bioavailability of vitamins (i.e. all the contents) is only 10-15% due to damage from gastric juices and enzymes in the stomach. This is a gray area however as there is little conclusive research available dealing with absorption rates since so many individual factors come into play from person to person.

How does it work?

The following facts come primarily from the Xtend-Life company's website (with permission). Locating other (supplement related) information on this topic has proven near impossible.

Colorcon a world leader in the manufacturer of advanced coating systems for pharmaceutical dosage forms provided a small amount of supporting data.19

Enteric coating is made up of cellulose polymers which are non-reactive and are not absorbed by

the body nor affect it in any way. These polymers are pH sensitive meaning they will not react to the more acidic ph levels in the stomach but will react and disintegrate in the alkaline environment in the small intestine.

The small intestine (duodenum) is where most nutrients, from the food we eat, travel to be absorbed into the bloodstream. So releasing supplement contents in the intestine is highly desirable from a bioavailability standpoint.

How can manufacturers be sure that enteric coating does what it's supposed to? By using tests which involve placing sample tablets in fluids simulating gastric juices and the pH environment of the small intestine.

The Xtend-Life company performs these tests on each batch of tablets they manufacture. They report the following typical test results:

No disintegration of the tablet after 2 hours in a fluid simulating the stomach

Total disintegration of the enteric coating after 12 minutes in a buffeted pH environment simulating the duodenum

Total disintegration of the enteric coating within 60 minutes of entering the duodenum.

Now, manufacturers of non enteric coated supplements will always point out that some vitamins and other nutrients actually need stomach acids to become bio available. This is true. However by including certain additional enzymes in enteric coated tablets these nutrients will become bio available when released in the intestine.

Don't waste your money!

The active ingredients are released in the stomach. Stomach acids attack the ingredients and break them into smaller particles. Depending upon the active ingredient, a proportion of it (often a majority) is destroyed by the acid. Some nutrients are not damaged by stomach acid. While some ingredients are in the process of being 'attacked' this can result in a feeling of discomfort. What is left of the remaining ingredients continue on to the small intestine where they go through the absorption process via the walls of the upper intestine.19

NOTE: Low quality, mass produced tablets full of excessive amounts of cheap binding agents may only partially disintegrate (or not at all), passing through the stomach and intestine almost intact with little vitamin absorption.

Why do companies do this?

Companies time and time again try to hide this fact from you as a consumer, their reasons for this, is this can be cost saving tactic or they haven't done their research to know that these enzymes need to be enterically coated because these enzymes cannot survive traveling through the digestive system. The enterically coating assists these systemic enzymes by making them ph resistant to the many different ph levels in the stomach and the digestive process along with the body's own processes of trying to break down the enzymes. Once systemic enzymes pass through the stomach they move into intestines for optimum delivery into the blood stream. Any enzyme blend without enterically coated enzymes is not only a waste of your money but a waste your time to fight back against your condition. Remember check with the company you by enzyme formulations and make sure to ask this product changing difference.

The most important part of any systemic enzyme formulations is who formulates the product and the enzyme supplier that the manufacture uses. To start there are many vitamin manufactures that offer enzymes and will combine any combination of enzymes to their purchaser's specification or likening. What the general public doesn't know is that there are few true enzyme suppliers in the world. By this we mean that the suppliers actually culture and fermentate their enzymes from the ground up. This is not only are complicated process but it requires many years of perfecting this process and then being able to supply highly absorbable and very effective enzymes. For about 99% of the enzyme formulations on the market today are enzymes that have been bought in bulk and shipped to bulk suppliers that in turn store this enzymes in questionable conditions and the resale them to the manufactures who in turn will add in many filters to this enzymes to add to the weight of the order to make a profit. Now it is highly unlikely that you will be able to obtain this information from your enzyme manufacture. But there is still one more step of the process that is over looked by most of the enzyme companies selling you products today and that is how they got their formulation and who, if anyone formulated it. A very high percentage of enzyme formulations on the market today were not formulated for a specific reason other than they have the ingredients in them that they know the consumers are looking for. Just because your enzyme formulation might have the same ingredients as a popular brand or a brand that you have used and it has worked does not mean the formulation are the same.20 This is a huge misunderstanding that most companies hope people are not aware of making the right choice when it comes to picking a effective enzyme formulation and can waste your money. You should make sure to always ask the company you're buying from who formulated their product and does there manufacturing facility buy enzymes directly from a enzyme cultivator.21

What can you tell me about AST's new systemic enzyme SERRACOR-NK® (SEBkinase®)?

SERRACOR-NK® (SEBkinase®) is formulated by the #1 enzyme supplier to the world Specialty Enzymes. They cultivate their own enzymes in a 200 million dollar enzyme manufacturing facility. Once the enzymes pass the many stringent testing qualifications they are then bio fused together into formulations by a team of enzyme researchers and doctors to have

the highest enzymatic effect within the body for that specific formulation. Specialty Enzymes has been formulating enzymes formulations for over 75 years and has been the leader in not only the highest quality enzymes but many of the effective enzyme formulations you seen on the market to date. ***SERRACOR-NK® (SEBkinase®)*** is Specialty Enzymes newest formulation SEBkinase a fibrin dissolving systemic enzyme blend that will effectively eliminate fibrosis and C-reactive protein within the body. In fact this same exact enzyme formulation has been available for the last 5 years. Now the SEBkinase blend is only being sold under the product name SERRACOR-NK. This unique formula contains Peptizyme[tm] Specialty Enzymes own trademarked serrapeptase.

Peptizyme SP® is formulated for maximum fibrinolytic activity. Fibrin is a tough protein arranged in long fibrous chains. It is formed from fibrinogen, a soluble protein that is produced by the liver and found in blood plasma. ***Peptizyme SP®*** supports normal fibrin metabolism, thus reducing viscosity and aiding normal blood flow. Fibrin tends to form circulating complexes that build a wall of fibrin around areas of inflammation, creating a barrier for the uptake of healing nutrients. In addition ***Peptizyme SP®*** supports healthy inflammatory response by reducing metabolic inflammation, usually an asymptomatic inflammatory process in response to stress, improper nutrition and other environmental insults. There is also evidence of inhibition of C-Reactive Protein, a marker for inflammation that has been linked to cardiovascular health. 22a, 22b

SERRACOR-NK® (SEBkinase®) also contains ***NattoSEB®*** [Nattokinase], also Specialty Enzymes own trademarked and formulated Nattokinase. ***NattoSEB®*** recently a new enzyme with potent fibrinolytic activity that rivals pharmaceutical agent has been discovered and shows great potential in providing support for hypercoagulative states. This all-natural enzyme, ***NattoSEB®*** [Nattokinase], is derived from fermented soy and the bacteria Bacillus Natto. Already, backed by research, ***NattoSEB®*** [Nattokinase] shows promise in supporting areas such as cardiovascular disease, stroke, angina, venous stasis, thrombosis, emboli, atherosclerosis, fibromyalgia/chronic fatigue, claudication, retinal pathology, hemorrhoid, varicose veins, soft tissue rheumatisms, muscle spasm, poor healing, chronic inflammation and pain, peripheral vascular disease, hypertension, tissue oxygen deprivation, infertility, and other gynecology conditions (e.g. endometriosis, uterine fibroids).

Both ***Peptizyme SP®*** (serrapeptase) and ***NattoSEB®*** (nattokinase) are enterically coated and are formulated to an exact milligram for optimal performance in this blend. Digestive enzymes (DigeSEB) are also used in the SEBkinase formula, there purpose is to aid in the enhance of the formula and should not be taken strictly as a digestive supplement. The last ingredient in

SERRACOR-NK® (SEBkinase®) is Co-Q10 this is in the formula not only as a coenzyme, but to complement the strong cardiovascular benefits of ***SERRACOR-NK® (SEBkinase®)*** 23

How can SERRACOR-NK® (SEBkinase®) help me*?*

SERRACOR-NK® (SEBkinase®) can be used to lower systemic inflammation throughout the body by dissolving fibrin within the circulatory system and non –living tissue. With the introduction of ***SERRACOR-NK® (SEBkinase®)*** to your body's own blood stream serrapeptase will start an enzymatic detoxification effect that binds to toxins and blood coagulation that will result in lower inflammation levels and the buildup of fibrinous tissue. The effectiveness Serrapeptase will play a large role in the lowering of pain and inflammation, eliminating the formation of Thrombus and the continuing buildup of fibrin (scar tissue). Overall the serrapeptase in ***SERRACOR-NK® (SEBkinase®)*** also works immunologically to modulate your body's immune system. When a normal to high immune response is achieved your body will be able to fend off the formation of fibrin formations that can be the cause of your conditions and have harmful effects in your body. A wealth of clinical studies and information can be found of the uses of Serrapeptase for anti-inflammatory effectiveness in the treatment of the following along:

- *Arthritis*
- *Cystic Fibrosis*
- *Injuries (contusions, sprains ,etc)*
- *Pulmonary Fibrosis*
- *Endometriosis (fibroids)*
- *Pain and inflammation*

NattoSEB® Nattokinase also plays a large role in the formulation of ***SERRACOR-NK® (SEBkinase®)*** Nattokinase is a potent fibrinolytic (anti-clotting) enzyme complex extracted and highly purified from a traditional Japanese food called Natto that has blood clot dissolving abilities and prevents the aggregation of red blood cells. Nattokinase has been used by doctors in Japan to stop blood clotting for many years, this relativity new systemic enzyme adds another level of fibrin dissolving effects to ***SERRACOR-NK® (SEBkinase®)*** that can assist users suffering from cardiovascular and blood clotting conditions. This is the most common cause of these blood clots that form during atrial fibrillation. This is a disorder found in about 2 million Americans. In atrial fibrillation the heart's two small upper chambers (the atria) quiver instead of beating effectively. Some blood isn't pumped completely out of them when the heart beats, so it pools and clots. When a blood clot enters the circulation and lodges in a narrowed artery of the brain, a stroke occurs. Although the human body produces more than 20 enzymes for making blood clots, it produces only one enzyme—plasmin—for dissolving them. The problem is, as we age the production of plasmin slows down, making the blood more prone to coagulation. And since plasmin is produced by endothelial cells throughout the body, it is possible to develop

blood clots anywhere in the body. ***SERRACOR-NK® (SEBkinase®)*** contains enterically coated ***NattoSEB®*** Nattokinase this insures that the Nattokinase is used systemically throughout the body to stop the formation of clotting anywhere in the body. As we age fibrogen levels rise and high levels of fibrinogen levels usually lead to increased platelet aggregation, blood clots, and eventually heart attack or stroke. In fact, high fibrinogen levels are considered a more dangerous risk factor for heart attack and stroke than high cholesterol. A study of 2,116 men found that those with high LDL (bad) cholesterol but low fibrinogen levels had only one sixth the risk for heart attack than the men with low LDL and high fibrinogen. ***SERRACOR-NK® (SEBkinase®)*** will address many different areas with the use of Nattokinase in its formula. The following are issues that the Nattokinase in ***SERRACOR-NK® (SEBkinase®)*** will help address:

- *supports normal blood pressure*
- *prevents blood clots from forming*
- *dissolves existing blood clots*
- *dissolves fibrin*
- *enhances the body's production of plasmin and other clot-dissolving agents, including urokinase*

The formulation in ***SERRACOR-NK® (SEBkinase®)*** can help for a variety of conditions users need to be aware that when using this product that you should discontinue all use of any type of blood thinning products. ***SERRACOR-NK® (SEBkinase®)*** will thin the blood and should not be taken without consulting your doctor if you are using any type of anti-coagulation products. Also ***SERRACOR-NK® (SEBkinase®)*** is a very strong systemic enzyme blend and users should start out taking 1 capsule a day for the first 3-7 days and then slowly increase the dosage till you reach your activation or therapeutic dosage. 22,23

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