




GLYCIMAX™
Ultra-Pure Bioenhanced

Glycine

ND Pharma &
Biotech

Glycimax™
Formulation Versatile



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Glycine

While you may not be familiar with the term specifically, you use Glycine every day to strengthen your body and to allow it to work properly.

This amino acid is essential for many different muscle, cognitive and metabolic functions. It helps break down and transport nutrients like glycogen and fat to be used by cells for energy, and in the process, it supports strong immune, digestive and nervous systems.

In the human body, Glycine is found in high concentrations in the skin, connective tissues of the joints and muscle tissue.

One of the key amino acids used to form collagen and gelatin, glycine can be found in bone broth and other protein sources. In fact, glycine (along with many other nutrients like *proline* and *arginine*) is part of what gives “superfood” bone broth its amazing healing abilities.

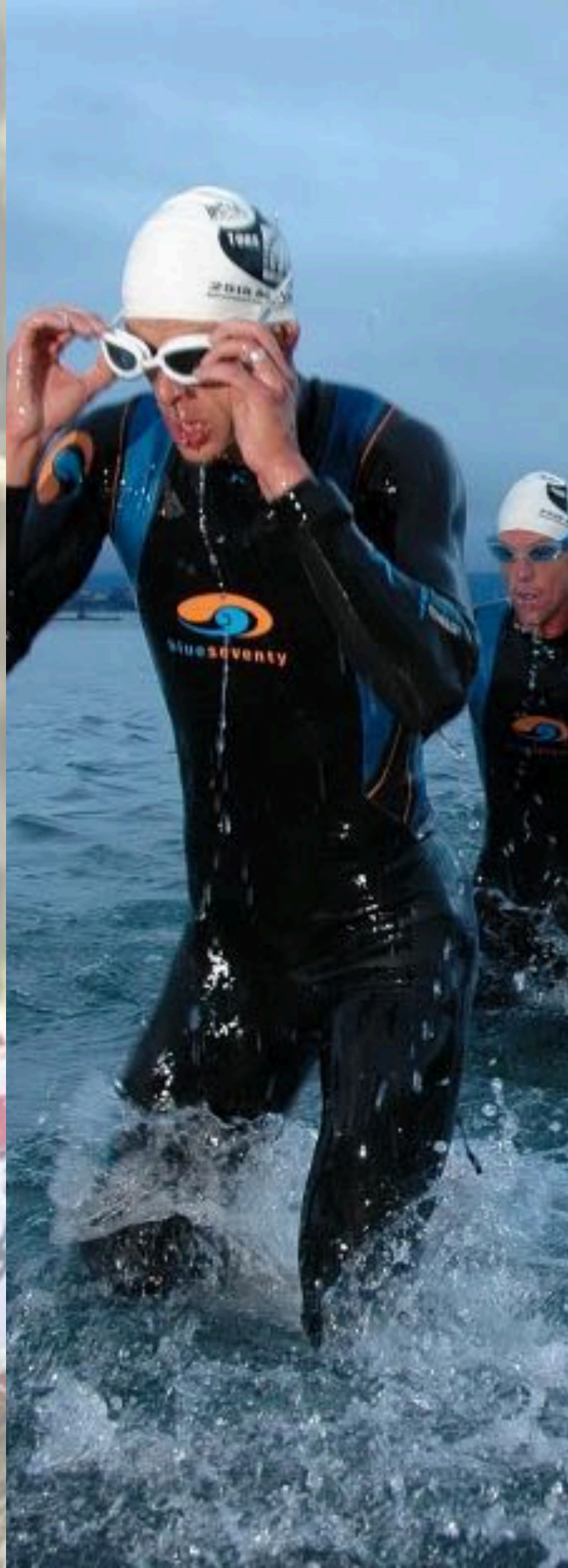
Glycine Benefits & Uses

According to research done by the Departments of Cell and Developmental Biology at the University of North Carolina at Chapel Hill, Glycine can be used to help lower symptoms in people suffering from conditions like *ulcers, arthritis, leaky gut syndrome, diabetes, kidney and heart failure, neurobehavioral disorders, chronic fatigue, sleep disorders, and even certain cancers.*⁽¹⁾

Amino acids such as glycine can be found in supplement forms. Now ND Pharma & Biotech company presents the best source for Glycine supplementation for industrial scale supplement fabrication and for food and foodstuffs manufacturing industry formulations.

Some of the many health benefits of glycine include:

- helping **build lean muscle mass**
- preventing **scaropenia** (muscle loss, muscle wasting or deterioration)
- playing a role in the production of human growth hormone
- boosting mental performance and memory
- helping prevent strokes and seizures
- protecting skin from signs of aging or cellular mutations
- protecting collagen in joints and **reducing joint pain**
- improving flexibility and range of motion
- stabilizing blood sugar and **lowering risk for type 2 diabetes**
- improving sleep quality
- lowering inflammation and free radical damage by increasing **glutathione** production
- reducing risk for certain types of cancer
- building the lining of the gastrointestinal tract
- producing bile salts and **digestive enzymes**
- helping reduce allergic and autoimmune reactions
- boosting energy levels and fighting fatigue
- helping produce red blood cells
- fighting the effects of stress and anxiety
- helping control symptoms of seizures, schizophrenia and mental disorders



TOP 6

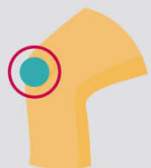
GLYCINE USES



1

PROMOTES MUSCLE GROWTH

Glycine is used during the biosynthesis of creatine, which provides muscles with a direct source of fuel to repair damage and grow back stronger.



2

REPAIRS AND PROTECTS JOINTS AND CARTILAGE

Approximately one-third of collagen is composed of glycine, and collagen is crucial for forming connective tissue that keeps joints flexible and able to withstand shock.



3

IMPROVES DIGESTION

Glycine helps form two of the most important substances that make up the gut lining: collagen and gelatin.



4

SLOWS THE EFFECTS OF AGING AND BUILDS THE IMMUNE SYSTEM

Glycine helps form glutathione, a valuable antioxidant that's used to prevent cellular damage and various signs of aging.



5

CALMS THE NERVES AND FEEDS THE BRAIN

It helps regulate nerve impulses throughout the body by balancing electrolyte levels, such as calcium, chloride and potassium.

6

FIGHTS FATIGUE AND PROMOTES RESTFUL SLEEP

Glycine is often used in supplements meant to improve energy in athletes, fight fatigue caused by anemia and help regulate blood sugar levels.





Among all of these benefits, here are several key ways glycine is used in the body:

1. Promotes Muscle Growth

Glycine has been found to help inhibit the deterioration of valuable protein tissue that forms muscle and boosts muscle recovery. In fact, it's known as an "anti-aging amino acid" because of how it helps maintain lean muscle mass into old age, stimulates the secretion of human growth hormone, prevents loss of cartilage in joints, and even improves daytime energy, physical performance and mental capabilities (all important for athletes). ^(2, 3)

Glycine is used during the biosynthesis of creatine, which provides muscles with a direct source of fuel to repair damage and grow back stronger. It also helps provide cells with energy thanks to its role in the conversion of nutrients from your diet, helping feed hungry muscle tissues and boosting endurance, strength and performance. It also has benefits when it comes to hormone production and regulation, helping the body naturally synthesize steroid hormones that regulate the ratio of fat to muscle mass and control energy expenditure. ⁽⁴⁾





2. Repairs and Protects Joints and Cartilage

Together with other amino acids found in bone broth (especially proline), glycine plays a part in the formation of collagen, promoting the growth and function of joints, tendons and ligaments. Approximately one-third of collagen is composed of glycine, and collagen is crucial for forming connective tissue that keeps joints flexible and able to withstand shock. This is why collagen hydrolysate is often used for the treatment of degenerative joint diseases like osteoarthritis. ⁽⁵⁾

As people get older, it's especially important to consume enough proteins (amino acids) in order to repair damaged tissues within joints that suffer due to ongoing free radical damage. Glycine is essential for the formation of stretchy, flexible cartilage, helps heal damaged joints, and can prevent loss of mobility and functionality in older adults. ⁽⁶⁾

3. Improves Digestion

Amino acids, including glycine and proline, help rebuild tissue that lines the digestive tract, keeping food particles and bacteria inside the gut where they belong, rather than allowing tiny openings to form that pass particles to the bloodstream where they trigger inflammation. Glycine helps form two of the most important substances that make up the gut lining: *collagen and gelatin*.

Collagen and gelatin help people with food allergies and sensitivities tolerate foods more easily, can soothe the lining of the GI tract in people with inflammatory bowel diseases or indigestion (including leaky gut syndrome, IBS, Crohn's, ulcerative colitis and acid reflux), and even promote probiotic balance and growth.

Within the GI tract, glycine also acts like a metabolic fuel. It's needed to manufacture bile, nucleic acids, creatine phosphate and porphyrins to be used to break down nutrients from your diet. For example, it helps break down fats by aiding with the production of bile acids and helps transport glycogen to cells to be used for energy in the form of ATP. Evidence also shows that glycine can help stabilize blood sugar levels, leading to more lasting energy and preventing sugar cravings and fatigue.

4. Slows the Effects of Aging and Builds the Immune System

Glycine helps form glutathione, a valuable antioxidant that's used to prevent cellular damage and various signs of aging. A 2011 study published in the American Journal of Clinical Nutrition found that although glutathione deficiency in elderly people occurs because of a marked reduction in synthesis, supplementation with the glutathione precursors cysteine and glycine fully restores glutathione synthesis. This helps increase concentrations and lowers levels of oxidative stress and oxidant damages that lead to aging ⁽⁷⁾

In certain studies, glycine has even been found to help prevent cellular mutations that lead to cancer. There's some evidence that using targeted amino acid therapy can prevent the growth of cancerous cells by cutting off their energy supply and help turn down inflammation, which is linked to numerous other chronic conditions besides cancer.



5. Calms the Nerves and Feeds the Brain

Glycine is beneficial for supporting cognitive performance and the central nervous system because of how it helps regulate the metabolic synthesis of certain nutrients that the brain and nerves use for energy. It helps regulate nerve impulses throughout the body by balancing electrolyte levels, such as calcium, chloride and potassium.

Due to its role in both nerve and neurotransmitter functions, glycine also has implications for helping improve sleep, mental performance, bodily sensations, moods, memory and behaviors. For example, glycine works with other amino acids, including taurine and gamma-amino butyric acid (GABA), as an inhibitory neurotransmitter.

Some evidence shows that glycine can help reduce hyperactivity in the brain and even play a role in the treatment or prevention of mental disorders, including learning disabilities, schizophrenia, bipolar disorder/manic depression and epilepsy. Certain studies have shown that glycine helps reduce psychotic symptoms, strokes and seizures when used with other supplements as part of a holistic treatment plan for mental/cognitive illness. ⁽⁸⁾



Nutritional Information and Facts About Glycine:

Glycine is the second most widespread amino acid found in human enzymes and proteins, which is why it has roles in nearly every part of the body. ⁽¹¹⁾

It's one of 20 amino acids used to make protein in the body, which builds the tissue that forms organs, joints and muscles. Of the proteins in the body, it's concentrated in collagen (the most abundant protein in humans and many mammals) and also gelatin (a substance made from collagen).

Some of the most attractive attributes include promoting better muscle growth, healing the lining of the GI tract, and slowing down the loss of cartilage in joints and skin.

While high-protein foods (like meat and dairy products) do contain some glycine, the best sources — collagen and gelatin — can be hard to get. These proteins are not found in most cuts of meat and instead are obtained from consuming parts of animals that today most people throw away: skin, bones, connective tissue, tendons and ligaments.

People who are ill, recovering from surgery, taking medications that hinder certain metabolic processes or who are under a lot of stress can all use extra glycine for recovery.

Glycine Recipes & Supplements

Getting more glycine into your diet is probably even easier than you think. Bone broth is a great source of naturally occurring glycine and other amino acids, is inexpensive, simple to make at home, and has far-reaching health benefits. Bone broth — which is made from slowly simmering animal parts, including bones, skin and tendons, in stock — contains natural collagen, which releases important amino acids and other substances that are often missing from the typical Western diet.

However, if you're not willing to consume bone broth — for example, you're a vegetarian or vegan — glycine can be obtained from plant foods too. Plant-based sources include beans; vegetables like spinach, kale, cauliflower, cabbage and pumpkin; plus fruits like banana and kiwi. Other than bone broth, glycine can also be found in "complete sources of proteins" (animal proteins), including meat, dairy products, poultry, eggs and fish.

Don't forget that glycine is also found in high amounts in gelatin, a substance made from collagen that's used in certain food products and sometimes for cooking or food prep. Gelatin isn't commonly eaten in large amounts but can be added to recipes when making some gelatin desserts, yogurts, raw cheeses or even ice cream.





What Is Glycine?

Classified as a “non-essential” (also called conditional) amino acid, glycine can be made in small amounts by the human body itself, but many people can benefit from consuming a lot more from their diets thanks to its numerous beneficial roles.

6. Fights Fatigue and Promotes Restful Sleep

Due to its roles in the central nervous system and the digestive system, glycine can help boost energy levels, balance blood sugar and prevent fatigue. It can even be used to calm anxiety or nervousness that keeps you up at night and gets in the way of getting good sleep — plus it helps directly bring nutrients to cells and tissue for energy at all times of the day. According to research done by the Japanese Society of Sleep Research, glycine supplements improve sleep quality, lessen daytime sleepiness and improve performance of memory recognition tasks. ⁽⁹⁾

One of its most important functions is helping carry out the biosynthesis of “heme,” a component of hemoglobin that helps produce and maintain red blood cells.⁽¹⁰⁾ Red blood cells help carry oxygen around the body, support cellular functions, and provide the tissue, heart and brain with energy. In fact, glycine is often used in supplements meant to improve energy in athletes, fight fatigue caused by anemia and help regulate blood sugar levels.

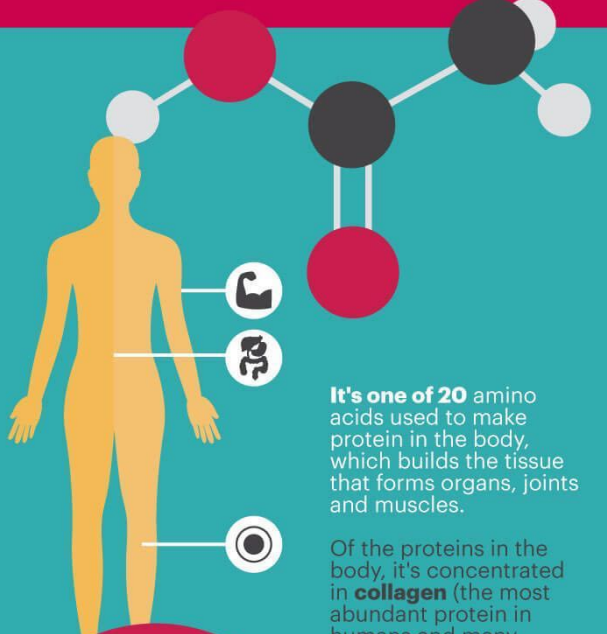
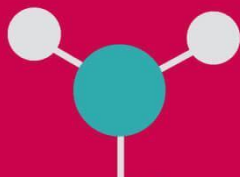


For a more detailed information about GLYCIMAX™ and food, nutrition & supplements industrial applications please write us to:
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THE SKINNY ON GLYCINE

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About GLYCIMAX™

Glycimax™ is a synthetic ultra-purified and bio-augmented glycine through a proprietary natural process that promotes the bioavailability and absorbability of compound transforming it into a more versatile product with an impressive performance in all the applications where it can be used and for what is designed. So in that way, it is transformed into a “thermo-nutrient” reaching functionalities that no other glycine in the market may reach.

Addition to all-kind of foods and supplements

Glycimax™ may be added to a number of foods, foodstuffs and supplements. In foods, it may act in a number of ways and functions, from bio-preservation to enrichment and/or fortification, in dependence of dosage.

While some foods (especially animal proteins and bone broth) do provide some glycine, amounts tend to be small overall so you need to consume supplements if you want to obtain a higher dose.

There is no established daily requirement or upper limit of glycine at this time. It's believed that most people already get around two grams of glycine daily from their diets, but needs differ a lot depending on someone's level of activity and state of health.⁽¹²⁾ Depending on the symptoms you're looking to resolve, you might benefit from consuming 10 times the average amount or even more.

Not all protein/amino acid supplements are created equal; always look for high-quality brands sold from reputable companies.

Because glycine is a natural amino acid, there's not much risk for consuming too much from your diet.

Glycine supplements can also interact with certain medications when taken in high doses (such as those used by people with mental disorders, including clozapine).

Although for most people glycine is very safe (especially in food form), if you take medications it's always a good idea to get your doctor's opinion when you begin to use any supplements.

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ND Pharma & Biotech is a biopharmaceutical company that discovers, develops and commercializes innovative products and therapeutics in areas of unmet medical, food, nutritional, agro, industrial and many other needs. The company mission is to advance the care of people suffering from certain diseases, worldwide and to make life better promoting green chemistry issues and removing certain chemical toxics from our daily lives. Company also acts as a chemical supplier and molecular provider including certain rare molecules and hard-to find compounds, API's Intermediates, Reactives, etc. Headquartered in Surrey, England, UK, ND Pharma & Biotech Company has operations worldwide thru a network of commercial and industrial partners, both companies and/or corporations.

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