



Amino Acid Compendium

- | | |
|--------------------------|-------------------|
| ● L-Arginine | ● Inositol |
| ● Acetyl L-Carnitine | ● L-Lysine |
| ● L-Carnitine | ● L-Methionine |
| ● L-Choline | ● L-Ornithine |
| ● L-Citrulline | ● L-Phenylalanine |
| ● N-Acetyl-L-Cysteine | ● L-Proline |
| ● Gaba | ● L-Serine |
| ● N-Acetyl-D-Glucosamine | ● Taurine |
| ● L-Glucosamine | ● L-Theanine |
| ● L-Glutamine | ● L-Threonine |
| ● Glycine | ● L-Tryptophan |
| | ● L-Tyrosine |

Information on
clinical uses | dosages | contraindications

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Member ATMS

On behalf of:

KRPAN Industries Pty Ltd



PURE AMINO ACIDS

Amino Acid	Weight	Features	Texture	Taste
	mgs/tsp	S	VF	
L-Arginine	4000	*	VF	fine granule bitter
Acetyl L-Carnitine	2000	**	VF	fine salt sour
L-Carnitine	2500	***	VF	salt lemon
L-Choline	3000	***S	VF	fine salt tangy
L-Citrulline	2000	*	VF	corn flour sour
N-Acetyl L-Cysteine (NAC)	3500	**	VF	crystalline sour/sulphur
N-Acetyl D-Glucosamine (NADG)	1500	***		icing sugar sweet
Gamma Amino Butyric Acid (GABA)	3000	***	VF	fine salt neutral
L-Glucosamine	3000	***		cornflour sweet
L-Glutamine	3000	*	VF	flour earthy
Glycine	3500	***	VF	sugar extra sweet
Inositol	3000	***	VF	icing sugar sweet
L-Lysine	3000	**	VF	granular neutral
L-Methionine	2000	*	VF	fine granules bitter/sulphur
L-Ornithine	2500	**	VF	corn flour neutral
L-Phenylalanine	2500	*	VF	flour bitter
L-Proline	2000	**	VF	icing sugar sweet
L-Serine	5000	***	VF	fine crystal sweet
Taurine	3000	**	VF	crystalline bitter
L-Theanine	2000	***	VF	icing sugar slightly sweet
L-Threonine	2500	**	VF	corn flour neutral
L-Tryptophan	1000	*	VF	corn flour bitter
L-Tyrosine	2000	*	VF	corn flour neutral

Solubility Guide: *Low **Med ***High | VF: Vegan Friendly | S: ≤ 1% silica

Weight is based on a level metric teaspoon rounded to nearest 0.5gm.

Tastings are described on a consensus basis, away from food.

This guide is an *approximation only* as materials can vary between batches according to milling and manufacture method as well as conditions such as humidity. *We hope this will be of assistance.*

HealthWise® have been supplying pure, pharmaceutical grade amino acids since 2005 with focus on **non-GMO vegan friendly** sources where possible.

For any further queries: aminos@healthwise.me





Amazing Arginine

L-Arginine

P U R E P O W D E R

T Y P E U S E D : A R G I N I N E H C L

A R G I N I N E H C L is a synthetically manufactured form of Arginine that combines the amino acid with a hydrogen chloride molecule. Hydrogen chloride is combined with Arginine to make the supplement more palatable and to **enhance absorption** by the digestive system.

Arginine HCL and Athletic Performance

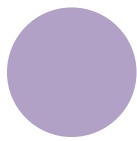
- One of the main effects of Arginine is that it causes vasodilation by stimulating the smooth muscle endothelial cells that line the blood vessels to produce the compound nitric oxide. Nitric oxide stimulates blood vessels to relax and expand, increasing the flow of blood and oxygen to the muscles during bouts of intense exercise, **especially resistance training**. An increase in blood flow and oxygen delivery during exercise may enhance performance, allowing muscles to **produce more strength and delaying the onset of exercise-induced fatigue**.

Arginine HCL and Hormone Production

- Arginine is an important catalyst for the production of **human growth hormone, or HGH**. When ingested, Arginine HCL stimulates the **anterior pituitary gland** to release HGH, increasing plasma levels of HGH circulating throughout the body.
- Naturally elevated levels of HGH has many benefits, including an **increase in muscle recovery and repair, regulation of metabolism, body fat reduction, and the optimal functioning of the heart and kidneys**.

Arginine and fertility support

- **Increase blood circulation to the uterus, ovaries and genitals** - L-arginine can improve blood circulation to the ovaries, allowing for optimum egg production. This increased blood flow to the uterus also creates a better environment to allow the implantation of a fertilized egg.
- Increased blood flow can also **improve the production of cervical mucous**. Abnormal mucous production contributes to the challenges faced by around 1 in 20 women dealing with fertility
- **Support normal sperm production** – research has found that taking a L-arginine supplement daily can increase sperm production in men, effects noticeable 6-8 weeks from start of supplementation
- Research has found that increased NO levels **reduce inflammation** which may help to prevent fibroids, endometriosis, PCOS, and aid with conception and implantation.



Amazing Arginine

L-Arginine

P U R E P O W D E R

OTHER BENEFITS OF ARGININE HCL

MedlinePlus cites studies for other possible benefits of Arginine HCL supplementation including improving surgery recovery time, treating congestive heart failure, reducing chest pain in coronary artery disease, reducing bladder inflammation, improving kidney function, and maintaining a healthy body weight in individuals suffering from muscle-wasting diseases such as HIV.

Side Effects and Contra Indications:

- Arginine HCL may have adverse effects on individuals who have liver and kidney disease
- Arginine HCL may also **unbalance the levels of potassium in the bloodstream**. With a potassium deficiency, Arginine may cause dehydration, nausea, stomach cramps and diarrhea. **Monitor use with blood thinning medications.**
- Individuals with **chronically low blood pressure** are advised not to take Arginine, as it may lower blood pressure even further, leading to fatigue and dizziness.

Dosage

- **For congestive heart failure**, MedlinePlus recommends doses ranging from **6g to 20g** per day, which varies on a case-by-case basis.
- For relieving chest pain caused by clogged arteries, 9 g to 28 g of Arginine is taken in equal increments three or four times daily.
- Men suffering from **erectile dysfunction** may benefit from **5g** of L-Arginine per day.
- 6 g per day is an effective dosage for **improving physical performance**.
- For **men and women's fertility support**, 5 gm either once or BD



Cognitive Carnitine

Acetyl L-Carnitine

PURE POWDER

TYPE USED : ACETYL L CARNITINE

Acetyl Vs L form:

Acetyl forms of amino acids are directly taken into the brain, and Carnitine is no exception. This is where the majority of actions take place, with the **Acetyl form used to treat memory related illness and neuropathies**.

The body can convert Acetyl L Carnitine into L Carnitine and visa versa, however, if you want weight loss, best use L Carnitine alone and if you are treating any related brain disorders, use the Acetyl form.

Memory and focus:

- Not only does ALCAR assist memory, but it is also able to increase dopamine which enhances focus and motivation. Additionally, individuals may feel an increase in focus and energy within about 15 to 20 minutes, so ALCAR can be used pre exercise or for mental clarity pre exam.
- Also great for muscle function, Acetyl L Carnitine is **vital for the health of the heart muscle** and also **reduces prostate inflammation**. Useful also for increasing aged related testosterone decline.

Brain Injuries and Neuronal support

- In recent years there has been considerable interest in the therapeutic potential of ALCAR for neuroprotection in a number of disorders resulting from **neuronal damage including hypoxia-ischemia, traumatic brain injury, Alzheimer's disease and in conditions leading to central or peripheral nervous system injury**. Additional studies are needed to better explore the potential of ALCAR for **protection of developing brain** as there is an urgent need for therapies that can improve outcome after neonatal and pediatric brain injury.

ALCAR as a synergistic amino acid

- ALCAR can provide an acetyl moiety that can be oxidized for energy and interestingly, is utilized as a **precursor for acetylcholine**, and resulting acetylcholine synthesis or incorporated into glutamate, glutamine and GABA, or into lipids for myelination and cell growth.

Neuropathy treatment:

- Several studies, including double-blind, placebo-controlled, parallel group studies and open studies showed the effect of ALCAR in treating diseases characterized **by neuropathies and neuropathic pain, including diabetic neuropathy, HIV and antiretroviral therapy-induced neuropathies, neuropathies due to compression and chemotherapeutic agents**. Statistical evaluations of 1773 patients in one double blind trial evidenced reduction of pain and improvements of nerve function, showing ALCAR may represent a consistent therapeutic option for peripheral neuropathies.

Dosages:

Alzheimers disease: 2-4 grams in divided doses

Age and alcohol related memory loss: 2 grams

Male Infertility: 1gram Acetyl and 2 gram L Carnitine. Use an additional 2-5 gram L Arginine for sperm motility

Neuropathies: 2-3 gm daily

Contraindications:

Blood thinners:

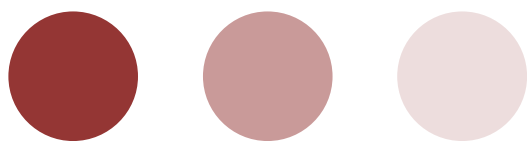
Sintrom and caution with Warfarin. Avoid with hypothyroidism

Side Effects:

Nausea, vomiting, "fishy" breath, urine and sweat

Best time of day to take Acetyl L- Carnitine:

Best taken in the morning before breakfast. Add Alpha Lipoic acid for heart health.



Cutting Carnitine

L-Carnitine

P U R E P O W D E R

T Y P E U S E D : L C A R N I T I N E T A R T R A T E

The Tartrate form is recognized as being the most **natural** and **well absorbed** of the Carnitine family.

While **acetyl Carnitine** is important for brain cognitive function and endurance, **L-Carnitine tartrate** excels at **weight loss**, **heart health** and **energy creation**.

Therapeutic Use:

The following are all studies using the tartrate form of Carnitine. Experts say that L Carnitine is one of the most well researched dietary supplements in the world with over 7800 studies listed with positive outcomes. Moreover, it is non-toxic, with minimal contraindications and adverse interactions, and well-tolerated by young and old. Whenever an organism needs energy, L-Carnitine plays an important role.

- **Fat Burning:** L-Carnitine mainly increases the rate at which fat is burned. This tends to reduce fat and build up lean muscle mass.
- **Fatty Acid Transport:** L Carnitine is best known as a facilitator of the transport of **fatty acids** into the mitochondria for oxidation.
- **Exercise performance:** The second lesser known role is in maintaining high density exercise by reducing lactic acid build up
- **Heart Health:** Minimizes the risk of **heart disease**

FYI: Healthy subjects consumed a high fat meal, which has been shown to cause impairment of vascular health. It was demonstrated in a trial that 2g of L-Carnitine taken with the meal enhanced vascular responses (increased dilation) to the high fat meal. This was most apparent in those subjects who had the greatest decrease in vascular function. Because vascular dysfunction is an early event in heart disease, Carnitine supplementation can be viewed as a preventative or therapeutic supplement to decrease the risk for heart disease.

Contraindications

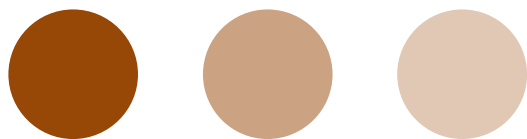
- **Seizures:** If you have ever had a seizure, you should avoid using L-Carnitine. For people with a history of seizures, the use of L-Carnitine has produced an increase in the seriousness and number of seizures, whether taken intravenously or orally.
- **Hypothyroidism:** if you have an under-active thyroid gland, or hypothyroidism, L-Carnitine tartrate may block T3 and T4. This occurs with a surgical thyroidectomy and thyroxine medications, so theoretically may also occur with an underactive thyroid. If you know you have hypothyroidism, it is best to avoid taking additionally L-Carnitine tartrate .

Dosage:

2 grams: Most studies are done at this dose, taking Carnitine post training, although it is just as popular to take this supplement pre training which may also increase energy output as well as thermogenesis

Take with **carbs (40-80 grams)** for an insulin spike to help shunt Carnitine into muscle tissue for peak performance

This information is for practitioner training purposes only.



Convivial Choline

L-Choline

P U R E P O W D E R *

T Y P E U S E D :
C H O L I N E B I T A R T R A T E

In the 1970's, researchers discovered the connection between the precursor choline and acetylcholine. Every cell in the human body uses choline to build its outer membrane, which keeps it from being dissolved in the bloodstream.

Brain Health:

- Due to its effect on the brain, choline has been shown to help with symptoms relating to Alzheimer's, dementia, and other age-related memory conditions. Aside from cognitive diseases and conditions, choline is also helpful for Huntington's, asthma, allergies, Tourette's, and schizophrenia. However, [the Bi tartrate form of Choline](#), although being easily absorbed, does not so easily cross the blood brain barrier (BBB), such as the acetylcholine amino acid.

Fat loss:

- Although some choline bitartrate will convert to acetylcholine and make it to the brain, the primary use of choline bi tartrate is fat loss by lipolysis, which is the use of fat over glucose as the body's primary energy source. It may also be beneficial for the prevention of future weight gain and prevention of fatty liver disease. Many athletes also take choline to help delay fatigue. Athletes that benefit the most are weight lifters and body builders, although endurance athletes also benefit. Choline works best pre exercise as working out will allow this fat to burn at an even faster rate. [Choline is an "old school" amino acid to take as a "stack" with carnitine and a small amount of caffeine.](#)

Methylation:

- In order for choline to be used as a methyl donor, it is first oxidized to betaine, which is mediated by the rate-limiting enzyme CHDH. Betaine then donates its labile methyl group to homocysteine for its remethylation to methionine. After methionine is converted to the universal methyl donor S-adenosylmethionine, the choline- or betaine-derived methyl groups can be used in various methylation reactions.

Side effects and contraindications:

- Consuming a high amount of choline may cause you to have a fishy body at approx 10 to 16 g a day can cause this undesirable effect and also cause you to sweat and salivate profusely. These conditions are caused by an increased amount of trimethylamine, which is a byproduct of metabolizing choline.
- Low blood pressure. [Taking more than 7 to 8 g of choline can significantly decrease your blood pressure, leading to hypotension. This can cause dizziness and fainting.](#)

Interesting fact: Choline bitartrate provides about 7 times as much choline as the more commonly used phosphatidylcholine supplements and up to 10 times as much choline as lecithin, although as stated, not all crosses the BBB. Choline bitartrate will not cause stomach upset, aspirin allergies, or "tingly" sensations, all of which are caused by the salicylate part of the product, not the choline itself

Dosage: 1gm: 1 – 3 x a day for [weight loss](#) pre exercise

*Note: HealthWise® L-Choline Bitartrate contains 99% pure pharmaceutical grade L-Choline. No more than 1% silica is added as an excipient.

This information is for practitioner training purposes only.



Scintillating Citrulline

L-Citrulline

P U R E P O W D E R

T Y P E U S E D :

L - C I T R U L L I N E D L M A L A T E

According to the book, "Nutritional Supplements in Sports and Exercise;" arginine and citrulline work together since arginine also promotes the natural production of citrulline in your body.

A high intake of arginine causes an increase in blood levels of citrulline, however large doses of arginine for vasodilation and NO production may cause unwanted side effects (see dosage). Not enough is known about the exact relationship between arginine and citrulline to determine the exact dose of citrulline while also taking arginine.

Metabolism of Citrulline:

- Citrulline is obtained from food, especially high in watermelons, and can be also manufactured from ornithine, within the urea cycle. This cycle helps rid your body of ammonia, a waste product of protein digestion. After the digestive system metabolizes citrulline malate into citrulline, enzymes in liver cells convert it into arginine, then into nitric oxide in a process that also produces new citrulline molecules.
- Supplementing **L-citrulline also increases ornithine and arginine** plasma content. This means L-citrulline supplementation improves the ammonia recycling process and nitric oxide metabolism. L-citrulline is also used to alleviate erectile dysfunction caused by high blood pressure.

Arginine VS Citrulline

- L-arginine and L-ornithine are subject to reduced absorption when supplemented in doses of 10g or more, which can result in diarrhoea. L-Citrulline does not have this side-effect, and since it increases plasma levels of all three amino acids, it may be the preferred as a supplement over L-arginine. L-citrulline doubles ornithine plasma content. Supplemental L-arginine provides a spike of L-arginine in plasma, while supplemental L-citrulline increases arginine plasma levels over a longer period of time.

Dosage:

A study published in 2008 by the "British Journal of Nutrition" found that short-term supplementation of citrulline in **2 to 15 g doses is safe** and well-tolerated. Another study published in 2002 by the "British Journal of Sports Medicine" found that 6 g per day of citrulline supplementation promoted aerobic energy production and changes in muscle metabolism in healthy subjects during exercise.



Notable NAC

N Acetyl Cysteine

P U R E P O W D E R

T Y P E U S E D : N A C E T Y L C Y S T E I N E

N Acetyl Cysteine, also known as **N Acetyl L Cysteine** or **NAC**, is an acetylated variant and precursor for the amino acid L Cysteine. It indirectly functions in the production of the body's most abundant antioxidant **glutathione**.

NAC and Liver clearance:

- Well studied for protecting liver damage from acetaminophen (paracetamol) overdose, carbon monoxide poisoning, carbon tetrachloride.
- **Reduces heavy metal** overload: Arsenic, lead, cadmium, mercury, copper excess
- Estrogen clearance ; NAC **removes excess estrogen** metabolites (E2) by moving through methoxylation and conjugation pathways
- **Glutathione production**: After ingestion, NAC is deacetylated, readying the Cysteine molecule to synthesize glutathione. This occurs in cells via the cysteine-glutamate antiporter.

NAC and Mental Health:

- Studies are ongoing using NAC for Bi Polar disorder, schizophrenia and autism are showing positive results. NAC works in a neuromodulatory fashion by increasing glutamate clearance and increasing dopamine pathways.
- Improves outcome from **Traumatic Brain Injury** with improvements in memory , sleep deprivation due to trauma and controlling dizziness
- Some chemotherapy treatments reduce **cognitive function**; supplementing with NAC and Lysine during chemotherapy helps prevent this decline
- **Help control addictions**. NAC **normalizes glutamate** in the reward centre of the brain through cysteine-glutamate exchanges thereby increasing glutamate clearance. This results in decreased cravings and addictive behavior. Addiction evokes strong dopamine release which also drives neuronal apoptosis, NAC can modulate dopamine release.
- **Alzheimer's and Parkinson's disease**: NAC helps **protect neurons** from damage and degeneration as Glutathione (GSH) is the main antioxidant that protects neurons from damage



Notable NAC

N Acetyl Cysteine

P U R E P O W D E R

NAC for immunity and lung diseases:

- Chronic Obstructive Pulmonary disease, Cystic Fibrosis and IPE responds to treatment with NAC
- As a **mucolytic**, NAC helps treat the common cold, respiratory congestion and influenza
- Strong evidence for use as a **chemopreventative agent**, especially for those at high risk of melanoma
- Inhibits the growth of **helicobacter pylori**

Other conditions:

- NAC helps in treatment of Sjogrens Syndrome
- **NAC Reduces Homocysteine** levels
- Prevent complications from kidney disease

Side Effects and Cautions:

- **NAC can reduce copper levels** in the body when using for more than 6 weeks. It is suggested the use of copper supplements when using NAC long term would be beneficial.
- The smell of NAC can be offensive to some. Drinking through a straw can help with this

Interactions:

- Nitroglycerine : (used in some instances for heart problems) **cannot be used with NAC**
- Activated Charcoal: **avoid taking NAC at the same time** as it nullifies the effect of charcoal

Dosage:

- **Take on an empty stomach for best results. Some studies have shown taking 1gm of Vit C with NAC will assist in the production of GSH**
- COPD and other chronic lung conditions: **3 gram in divided doses**
- Acute respiratory infections: **1 gram twice daily**
- Liver clearance and Homocysteine: **up to 2 gram**



Gracious GABA

GABA

P U R E P O W D E R

T Y P E U S E D : G A M M A
A M I N O B U T Y R I C A C I D

The Role of GABA in regulating anxiety

- Anxiety results from a coordinated activity of numerous brain pathways interacting with different neurotransmitters and being modulated by local and distant synaptic relays. The area in the brain where anxiety is primarily initiated is the **Amygdala**.
- The role of the inhibitory neurotransmitter GABA has long been regarded as central to the regulation of anxiety within this neurotransmitter system and the Amygdala. It is within this target area that drugs such as benzodiazepines are activated.
- It should be remembered that GABA is not the only neurotransmitter important in the modulation of anxiety responses, many other neurotransmitters have been implicated, including serotonin, oxytocin and corticotropin-releasing hormone. The brain circuits in the Amygdala are thought to comprise of inhibitory networks of γ-aminobutyric acid-ergic (GABAergic) interneurons which play a key role in the modulation of anxiety responses both in the normal and pathological state. Precursors to serotonin in the forms of Tryptophan and 5HTP, increase the action of GABA.

Crossing the BBB

- There is little evidence that GABA taken orally will be able to cross the Blood Brain barrier entirely, however a number of studies have shown small amounts readily cross. Studies have shown that the addition of **activated B3** may also increase the passage through the BBB.

Brain-Gut connection

- As many suffers of anxiety attest to finding relief from their symptoms when taking GABA, could there be an additional involvement via the bidirectional signaling between the **brain and Enteric nervous system** which is located in the gut? This bidirectional signaling between the brain and the ENS is vital in maintaining homeostasis and even though most research thus far has focused on the signaling from the brain to the gut, an increasing number of studies have explored the influence of the gut's microbiota on the brain. For example, gut microbiota have been shown to improve mood and reduce anxiety in patients with chronic fatigue. It has been found that certain probiotic strains are able to produce GABA *in vivo*. **Specifically, bacteria from the strains *Lactobacillus* and *Bifidobacterium* were effective at increasing GABA concentrations in the ENS.**



Gracious GABA

GABA

P U R E P O W D E R

More info about Gamma Amino Butyric Acid

Did you know?

All sorts of other unexpected things change GABA activity, for example, the chemicals formed by aging whiskey in oak barrels increase GABA's effect in the brain when the chemicals released from the alcohol as a fragrance and reach the [brain via inhalation](#). The fragrance of [Oolong tea](#) has a similar effect, increasing GABA's action as does, to a lesser extent, extracts of green and black tea.

Toxicity

GABA is designated GRAS (Generally Recognised As Safe) by the FDA, and there are no reports of any toxic effects from taking GABA.

Side Effects and interactions:

- First, as always, be extremely cautious about what to recommend if someone is [pregnant or breast-feeding](#). Although there is no data on safety while pregnant or breastfeeding it is wise to be cautious. It's been reported that high doses can have unexpected effects – some people have found that a [high dose actually increases anxiety](#).
- High doses can also result in [skin flushing, or skin tingling](#) but keeping to doses under 2 gram, especially when taken in divided doses, should not cause these problems.
- Not recommended for people with [bi polar disorder or a history of seizures](#).

Tryptophan, Tyrosine or GABA?

Generally, if the problem is depression try a serotonin booster instead. If there is a susceptibility to serious depression, be careful with GABA as it can trigger a depressive episode. Indeed, if the presenting complaint is depression or low energy, mood and poor concentration, first try boosting serotonin, (tryptophan) dopamine (tyrosine) or using adrenal adaptagens.

Anxiety

500mg-2 gram a day in divided doses. To maximize chances of crossing the BBB, take away from meals with an insulin carrier such as honey or mixed with juice or coconut water as well as with an activated B complex, or preferable activated B3 alone

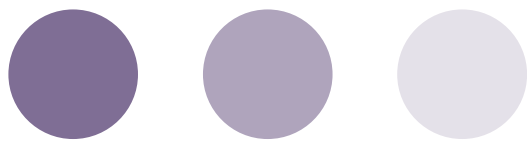
Athletic Performance

2-5 gram dependant on body weight, with an insulin carrier and activated B3. Take at night for best results

Interactions and Cautions:

Monitor those on [Blood pressure medications](#) when using GABA in case the blood pressure becomes excessively low and watch low blood pressure

Do not use with SSRI's (Serotonin reuptake inhibitors) as GABA can inhibit serotonin and dopamine in some individuals



Naturalizing NAG

N-Acetyl D-Glucosamine

P U R E P O W D E R

T Y P E U S E D :

N - A C E T Y L D - G L U C O S A M I N E

N-acetyl D glucosamine (NAG) is a type of monosaccharide that is also related to glucose and is chemically similar to glucosamine. However, unlike glucose, N-acetyl glucosamine is not really a sugar but belongs to a **class of compounds called amides**, although it is commonly described as a carbohydrate.

NAG occurs naturally in the outer shells of certain insects and shellfish and is synthesized from the reaction between **glucosamine and acetic acid**. Although NAG can be found in certain cosmetic products where it is used as an **exfoliating and anti-wrinkle agent**, its main use is as a dietary supplement in the treatment of **autoimmune diseases**

IBS: Crohns and Ulcerative Colitis

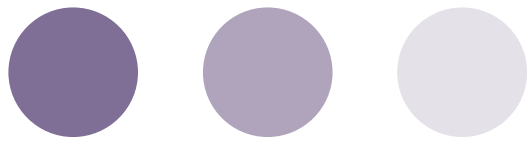
- The protective wall of the GIT incorporates N-acetyl glucosamine. NAG shows promise in the treatment of inflammatory bowel disease, a class of conditions that includes **Crohn's disease**: from impaired innate immunity which is an abnormal immune response to microbial invasion, and Ulcerative Colitis.
- Testing on children with severe Crohn's disease and severe ulcerative colitis found that daily treatment with N-acetyl glucosamine led to a significant improvement in symptoms and a **decrease of inflammation** in their damaged soft tissue of the GIT.

Auto Immune diseases:

- A 2011 study from the *Journal of Biological Chemistry* indicates that N-acetyl glucosamine may help suppress the destructive autoimmune response involved in **multiple sclerosis**.
- As Glucosamine Sulphate and HCL are also currently used in the treatment of Rheumatoid arthritis, it would be logical to assume that NAG could be used as it suppresses the auto immune response as well as exerts anti inflammatory effects.

How NAG works:

- NAG takes the more direct route to the important macromolecules such as **hyaluronic acid, keratin sulfate and chondroitin sulfate**. Unlike the low-molecular glucosamine found in glucosamine sulfate or glucosamine hydrochloride, N-acetyl-D-glucosamine is an advanced molecule that **requires fewer enzymatic steps** before being incorporated into the macromolecules of cartilage. NAG saves the user several biochemical steps involved in the conversion of glucose-6-phosphate to N-acetyl glucosamine for improved immune response.
- Tissue biopsies taken from gastrointestinal tracts of Crohn's patients showed decreased glucosamine synthetase activity in the inflamed tissues. Because of the loss of this important structural carbohydrate, the inflamed tissues experience rapid loss of epithelial cells.



Naturalizing NAG

N-Acetyl
D-Glucosamine

P U R E P O W D E R

Suitable for Diabetics:

NAG **does not interfere** with glucose metabolism. Low-molecular glucosamine, as in glucosamine sulfate or glucosamine hydrochloride, has been associated with glucose uptake in patients. This probably occurs because low-molecular-weight glucosamine inhibits glucokinase. Because N-acetyl-D-glucosamine has its own kinase it is not dependent on glucokinase and **does not cause a rise** in glucose levels when consumed.

Note on Shellfish allergy:

Shellfish allergy is triggered by the *meat* of seafood and not by their shells. Therefore, shellfish allergy does not involve chitin or N-acetyl glucosamine. This means that those with shellfish allergy *can safely* take NAG, however there may be some by product remaining in the production of NAG which could trigger an allergic response.

Safety and Contra Indications:

How safe is N-acetyl glucosamine? The results of current safety studies suggest that N-acetyl glucosamine is very safe. However, N-acetyl glucosamine is not recommended for pregnant and breastfeeding women as well as those who are about to undergo surgery.

NAG should be used cautiously by patients who also suffer from asthma, bleeding disorders and kidney problems.

NAG should not be taken with anticoagulant drugs such as warfarin.

Side Effects:

None noted

Dosage:

3-6 gram daily in divided doses.

NAG dissolves readily and is heat stable, so may be added to hot beverages.



Gallant Glucosamine

L-Glucosamine HCL

P U R E P O W D E R

T Y P E U S E D :

L - G L U C O S A M I N E H C L

Why use Hydrochloride?

- Most literature concentrates on Glucosamine Sulphate, only because this is a more prevalent type of glucosamine on the market. In fact, the hydrochloride form is more concentrated than the sulphate form, approx 3000 mg of sulphate = 1500 mg of hydrochloride, and contains substantially less sodium per effective dose than the sulphate form.
- Because glucosamine sulphate is stabilized with sodium chloride (table salt) and can contain as much as 30% sodium, there needs to be consideration for individuals who want to reduce their dietary intake of sodium.

Uses for Glucosamine Hydrochloride:

- Since glucosamine is a precursor for glycosaminoglycans, which are a major component of cartilage, supplemental glucosamine may beneficially influence cartilage structure, and alleviate the symptoms of arthritis. There have been multiple clinical trials testing glucosamine as a potential medical therapy for osteoarthritis, some, but not all results have supported its use.
- Glucosamine concentrations in plasma and synovial fluid increase significantly from baseline levels when ingesting Glucosamine hydrochloride and these levels could be biologically advantageous to articular cartilage. In the short term however, the levels are still 10 - 100 fold lower than required to positively affect the cartilage and to build new tissue—validating long term use of glucosamine hydrochloride to be effective.

The use of Glucosamine Hydrochloride as a therapy for osteoarthritis appears safe; however there are contra indications as listed

Contra Indications:

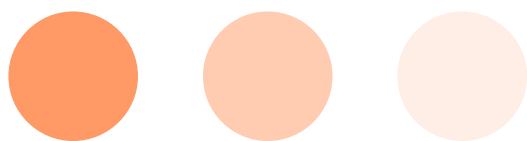
Glucosamine reacts with warfarin and other blood thinning medication. There are several reports stating that taking glucosamine (with or without chondroitin) increase the effect of warfarin on blood thinning. This can cause bruising and bleeding.

Antimiotic chemotherapy may interact with Glucosamine hydrochloride as medications for cancer work by decreasing how fast cancer cells can copy themselves and it is postulated that glucosamine might increase how fast tumor cells replicate themselves

Dosages:

Osteoarthritis: 1500-2500mg daily

Knee pain: 1000 -1500 mg daily.



Gregarious Glutamine

L-Glutamine

P U R E P O W D E R

T Y P E U S E D : L G L U T A M I N E

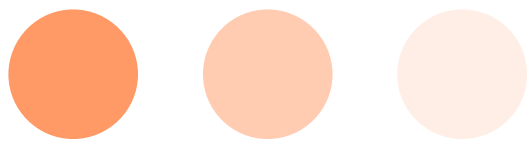
naturally fermented at low temperature

Athletic Use:

Glutamine is stored in skeletal muscle along with other sites in the body including the intestine, brain and lung. Not much is written about its use in sports medicine and the idea of Glutamine as a muscle repair agent is not well studied, but is used regardless

Other Uses:

- Glutamine is used to counter some of the **side effects** of medical treatments. For example, it is used for side effects of **cancer chemotherapy** including **diarrhea, pain** and swelling inside the mouth (**mucositis**), nerve pain (**neuropathy**), and muscle and joint pains caused by the cancer drug **Taxol**.
- Glutamine is also used to **protect** the **immune system** and **digestive system** in people undergoing radio/chemotherapy for cancer of the esophagus..
- Additionally, glutamine is used for **improving recovery after bone marrow transplant or bowel surgery**, increasing well-being in people who have suffered traumatic injuries, and preventing infections in critically ill people. After surgery or traumatic injury, nitrogen is necessary to repair the wounds and keep the vital organs functioning. About **one third** of this **nitrogen** comes from **glutamine**.
- Some people use glutamine for digestive system conditions such as **stomach ulcers, ulcerative colitis**, and **Crohn's disease**. It is also used for depression, moodiness, irritability, anxiety, insomnia (not as much evidence)
- People who have HIV can use glutamine to **prevent weight loss (HIV wasting)** This is because the body uses more glutamine than it can replace where there are muscle wasting diseases present
- Glutamine is also used for attention deficit-hyperactivity disorder (ADHD), a urinary condition called cystinuria, sickle cell anemia, and for alcohol withdrawal support.



Gregarious Glutamine

L-Glutamine

P U R E P O W D E R

Dosage:

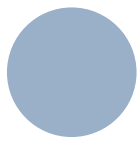
For adults ages 18 and older: Doses of **500mg, 1 - 3 times daily**, are generally considered safe and used for **general stomach complaints and wound healing**

Doses as high as **5,000 - 15,000 mg daily (in divided doses)**, or sometimes higher, may be prescribed by a health care provider for certain conditions. These include Crohn's and **chemotherapy support**.

Caution:

People with kidney disease, liver disease, or Reye syndrome (a rare, sometimes fatal disease affecting children that is generally associated with aspirin use) should not take glutamine.

Some people exhibit signs of excitability and wakefulness when taking glutamine and could be converting Glutamine to Glutamic acid, which could explain these symptoms



Galactic Glycine

Glycine

P U R E P O W D E R

T Y P E U S E D : G L Y C I N E

Athletic Use:

- As one of the few amino acids that helps improve blood-sugar storage, some sports scientists suggest L Glycine may increase energy, particularly when taken for **endurance activities**. Additionally, Glycine has been shown to help **slow muscle breakdown** by supplying **Creatine** to the muscle cells, thereby **preventing ATP depletion** and optimizing energy levels.
- Conversely, storing too much Glycine in the body can cause fatigue, so it is imperative to have the correct amount in the cells.
- Glycine can **enhance growth hormone release** when used with ornithine, arginine, glutamine, tyrosine, Vitamin B6, niacinamide, zinc, calcium, magnesium, potassium, and/or Vitamin C.

Neurotransmitter Inhibition:

- L Glycine plays an essential role as an inhibitory neurotransmitter via glycine receptors in the CNS which can improve sleep patterns and improve sleep latency. Glycine can also reduce core body temperature when sleeping, thereby influencing the natural circadian rhythm and improving sleep quality.
- Research has shown that this amino acid can help inhibit the neurotransmitters that cause **seizure** activity, **hyperactivity**, and manic (**bipolar**) depression.
- Glycine can also be converted to another neurotransmitter, serine, as needed, and may be beneficial in the management of **schizophrenia**

Antacid:

Glycine is also used as an **antacid agent** and is reportedly effective for limiting stomach discomfort. In addition, it may help shuttle toxic substances out of the body.

Prostate:

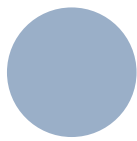
Because the prostate contains considerable amounts of Glycine, this nutrient may help promote prostate health. Studies have found that Glycine, taken with alanine and glutamic acid, reduced the amount of swelling in the prostate tissue and potentially aid in the **treatment of BPH**.

Ischemic Stroke:

Putting 1 teaspoon Glycine under the tongue may help to limit brain damage caused by an ischemic stroke when started within 6 hours of having the stroke.

Leg Ulcers:

When applied as cream (see dosage section for recipe)



Galactic Glycine

Glycine

P U R E P O W D E R

Dosage:

Athletic Use:

2-6 grams daily pre endurance events or work outs

CNS:

4 gram in the evening for general neurotransmitter support for sleep. Glycine may be used as a sugar substitute in a relaxing herbal tea before bed and children have no difficulty with the taste. Adjust dosage for children, generally half dose 6-12 years of age. Some clinical trials with schizophrenic patients use **40 to 90 grams** daily (based on .8 gm per kg body weight)

Leg ulcers:

A cream containing 10 mg of Glycine, 2 mg of L-cysteine, and 1 mg of DL-threonine per gram of cream has been used to successfully treat leg ulcers. The cream is applied at each wound cleaning and dressing change once daily, every other day, or twice daily as needed.

Caution:

Individuals with **kidney or liver disease** should **not consume Glycine** without consulting their specialist. Taking any one glycerol based amino acid supplement can cause a disruption of the citric acid or Krebs cycle, potentially increasing the amount of nitrogen or ammonia in the body, which makes the liver and kidneys work harder to remove waste.

Contraindications:

Clozapine (Clozaril) is used to help treat schizophrenia. Taking Glycine along with clozapine (Clozaril) might decrease the effectiveness of clozapine (Clozaril).

It is not clear why this interaction occurs yet. Do not take Glycine if you are taking clozapine



Intense Inositol

Inositol

P U R E P O W D E R

T Y P E U S E D : M Y O I N O S I T O L

Inositol is considered an amino acid, but is also part of the B group family and is traditionally used in vitamin B complexes. More recently, using inositol to regulate insulin resistance commonly seen with infertility issues, has become popular with practitioners who specialize in fertility management.

Polycystic ovary syndrome (PCOS) and Fertility:

- Taking a particular form of inositol (isomer D-chiro-inositol) by mouth seems to lower triglyceride and testosterone level and modestly decrease blood pressure. To promote ovulation in obese or insulin resistant women with polycystic ovary syndrome, Myo inositol is the preferred form of inositol used by practitioners. A recent 2017 trial on fertility showed, inositol's potential during a recent randomized controlled trial. Researchers pitted 1500 mg per day of metformin up against 4000 mg per day of myo-inositol. In this direct comparison that included patients both with and without insulin resistance, myo-inositol outperformed metformin when it came to reducing testosterone levels, hirsutism, and markers of inflammation

Panic disorder:

- Inositol shows some promise for controlling panic attacks and the fear of public places or open spaces (agoraphobia). One study found that inositol is as effective as a prescription medication. However, large-scale clinical trials are needed before evaluating the effectiveness of inositol for panic attacks.

Obsessive-compulsive disorder (OCD):

- There is some evidence that people with OCD who receive inositol by mouth for 6 weeks experience significant improvement. The dose of inositol is very high (see below) to achieve this improvement and should be done gradually and to tolerance

Interesting FYI's: Inositol has resolved breathing problems in premature infants known as **acute respiratory distress syndrome** when given intravenous.

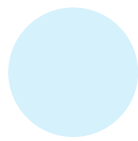
Inositol can improve the symptoms of Psoriasis when it is a side effect of lithium drug therapy. Inositol doesn't seem to help psoriasis in people not taking lithium.

Caution:

Bipolar disorder: There is some concern that taking too much inositol might make bipolar disorder worse. There is a report of a man with controlled bipolar disorder being hospitalized with extreme agitation and impulsiveness (mania) after drinking several cans of an energy drink containing inositol, caffeine, taurine, and other ingredients (Red Bull Energy Drink) over a period of 4 days. It is not known if this is related to inositol, caffeine, taurine, a different ingredient, or a combination of the ingredients.

Dosage:

- For panic disorder: **12 to 18 grams** per day
- For obsessive-compulsive disorder: inositol **18 grams** per day.
- For treating symptoms associated with polycystic ovary syndrome: Myo inositol: **2 -4 gram** per day. Some fertility specialists also recommend the addition of the D – Chiro form of inositol alongside of the myo form.
- For treating lithium-related psoriasis: **6 grams** daily



Lucid Lysine

L-Lysine

P U R E P O W D E R

T Y P E U S E D : L Y S I N E H C L

Lysine is important for proper growth, and it plays an essential role in the production of Carnitine. **Lysine is sometimes taken with the 2:1 Arginine to Ornithine ratio to produce HGH (2:1:1 lysine).**

Uses:

- Lysine appears to **help the body absorb calcium**, and it plays an important role in the formation of collagen, a substance important for bones and connective tissues including skin, tendon, and cartilage, so may help prevent osteoporosis.
- Most people get enough lysine in their diet, although **athletes, vegans** who don't eat beans, as well as **burn patients** may need more.
- Studies have shown taking lysine on a regular basis may help prevent outbreaks of **cold sores and genital herpes**. Lysine has antiviral effects by blocking the activity of L Arginine, which promotes HSV replication. Studies suggest oral lysine is more effective for **preventing an HSV outbreak** than it is at reducing the severity and duration of an outbreak.
- Lab studies suggest that lysine in combination with L-Arginine **makes bone building cells more active and enhances production of collagen** (possibly by association with HGH?)

Dosage:

- For adults ages 13 and older: Recommendations are **12 mg/kg/day**.
- An example of a dose often used during an active herpes flare up is **3 – 9 gram** per day in divided doses for a short period of time. To prevent recurrences, many people take 2-3 gram daily.

Contra Indications:

High doses have caused gallstones so avoid use when Gallstones are present or for those with a history of gallstones

There have also been reports of renal dysfunction, including Fanconi's syndrome and renal failure when taking high doses of lysine.



Methodical Methionine

L-Methionine

P U R E P O W D E R

T Y P E U S E D : L M E T H I O N I N E

Glycogen & SAMe:

In addition to its role as a precursor in protein synthesis, L-methionine participates in a wide range of biochemical reactions, including the production of S-adenosylmethionine (SAM or SAMe), L-cysteine, glutathione, taurine and sulfate. Methionine is also a glycogenic amino acid and may participate in the formation of D-glucose and glycogen so may help with **energy production and stamina**

- **Liver detoxification:** The ability of L-methionine to **reduce** the liver-toxic effects of such hepatotoxins as acetaminophen and methotrexate has led to the suggestion that methionine should be added to acetaminophen products. However, there is some recent research suggesting that elevated L-methionine intake may promote intestinal carcinogenesis. This is unclear.
- **Heavy Metal Toxicity:** L-methionine is involved in the formation of many substances containing protein, as well as providing sulphur. It is necessary for the **bonding** and **excretion of toxic heavy metal** compounds.
- **UTI's:** Methionine is also capable of pushing the **pH-value** of urine into the **acidic part** of the scale, **reducing the occurrence of cystitis** and other **urinary tract infections**. The effectiveness and efficiency of ampicillin and other **antibiotics** is also **improved** where the pH-value ranges between 4 and 6.

Absorption:

- Some metabolism of L-methionine takes place within the **intestines**. That which is not metabolized is transported to the liver via the portal circulation. In the liver, L-methionine, along with other amino acids, participates in protein biosynthesis. It may also participate in a wide variety of metabolic reactions, including the **formation of SAMe, L-homocysteine, L-cysteine, taurine and sulfate**. There is where it is also metabolized to produce D-glucose and glycogen. L-methionine that is not metabolized in the liver is transported to the various tissues of the body where it is involved in reactions similar to those described above.

Contra indications and Interactions:

- One of the metabolites of L-methionine, **L-homocysteine**, has been implicated as a significant factor in coronary heart disease and other vascular diseases so avoiding use with high homocysteine levels seems prudent. Generally, it is recommended when taking methionine supplements to take extra B-complex vitamins, particularly **vitamin B6, vitamin B12 and folate**. (see tips and tricks handout)
- Amino acids like methionine, Creatine and SAMe can **inhibit** absorption of the Parkinson's disease medication **L Dopa** warn the University Of Pittsburgh Medical Center.

Dosage:

- Even without B-vitamin deficiencies, taking high doses of methionine **-7g daily or more-**can increase your homocysteine levels.
- Studies show taking up to **2g per day** of methionine doesn't appear to cause any serious adverse effects.



Ornate Ornithine

L-Ornithine

P U R E P O W D E R

T Y P E U S E D : L O R N I T H I N E H C L

Athletic Performance:

- Stimulation of HGH in combination with Arginine HCL; Arginine 2gm: Ornithine 1gm
- L-Ornithine has an anti fatigue effect in increasing the efficiency of energy consumption

Kidneys and Cleansing:

- Ornithine is the driving force of action of the enzyme Arginase which creates Urea. Therefore, ornithine is a central part of the urea cycle, which allows for **the disposal of excess nitrogen and ammonia**. Ornithine utilizes Ammonia and Nitrogen to **produce Urea** which is then excreted by the kidney.
- Used in Parasite Cleansing to mop up ammonia produced from parasites. Excessive ammonia can cause insomnia, according to Hulda Clarke.
- Possibly an adjunct treatment to those with **impaired liver function** due to excess ammonia and nitrogen when shown in blood tests
- Useful for **wound healing post surgery** due to the fact it acts as a precursor of citrulline, proline and glutamic acid, all of which play a role in healing of tissues.
- Ornithine may promote better sleep by detoxifying ammonia which restricts cellular respiration, thereby increasing ammonia in the brain, leading to sleeplessness.

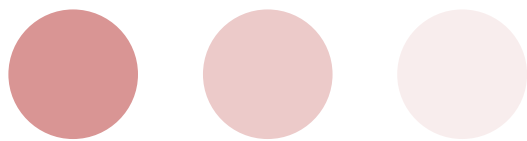
Interesting Note: High ammonia levels can occur for a variety of reasons. Causes for elevated ammonia in the bloodstream include parasites, liver failure, hepatitis, liver cirrhosis, Reye's syndrome in children, intestinal bleeding, cardiovascular conditions, kidney complications and a rare, inherited disorder of the urea cycle called Citrullinemia. If left untreated, these conditions can lead to complications like a liver abscess.

Early symptoms of high ammonia levels can include **lethargy, confusion and memory difficulties**.

Dosage:

- Parasites, high ammonia levels and sleep: **1-5 grams** at night
- Athletes: **3-6 grams**.

L-Ornithine HCL is generally considered safe to take in doses up to 10gm, but intestinal symptoms like diarrhea may occur in this dose. No contraindications have been noted.



Formidable Phenylalanine

L-Phenylalanine

P U R E P O W D E R

T Y P E U S E D : L P H E N Y L A L A N I N E

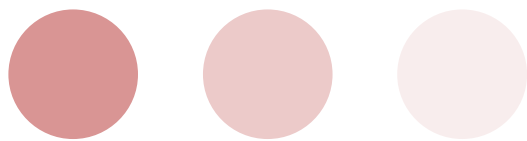
Phenylalanine is found in 3 forms: **L-phenylalanine, the natural form** found in proteins; D-phenylalanine (a mirror image of L-phenylalanine that is made in a laboratory), and DL-phenylalanine, a combination of the 2 forms.

Athletic and Other Uses:

- Metabolism: L-phenylalanine acts primarily on the **digestive system** and the **metabolic rate**.
- One of phenylalanine's primary functions is to serve as a **precursor** to the amino acid **tyrosine**, which in turn is needed to produce the hormone **thyroxine**.
- **Appetite Suppression:** Phenylalanine also stimulates the release of cholecystokinin, a digestive system hormone that produces a feeling of satiety after eating and decreases interest in eating, as well as being a precursor molecule for the neurotransmitter norepinephrine, a compound that also plays a role in controlling appetite.
- **Depression:** The body changes phenylalanine into tyrosine, which makes proteins, brain chemicals, including **L-dopa, epinephrine, and norepinephrine**, and thyroid hormones.
- Pain Control: D Phenylalanine (but not L-phenylalanine) has been used to treat chronic pain
- Skin Conditions: **Vitiligo**. Phenylalanine is a **precursor to melanin** via L Tyrosine so is used in the treatment of Vitiligo along with sunlight therapy.

Dosage: No more than 5 gram a day for any conditions.

- More than 5 gm can cause neuropathies.
- Take phenylalanine on an **empty stomach** 15-20 minutes before eating or with juice.
- It is recommended to start with **500-1,000 mg** in the morning before breakfast. Some people may take another 500-1,000 mg 4-6 hours later.
- Taking phenylalanine too close to bedtime may disrupt sleep



Formidable Phenylalanine

L-Phenylalanine

P U R E P O W D E R

Drug Interactions and Cautions:

- **Monoamine Oxidase Inhibitors:** Monoamine oxidase inhibitors (MAOIs) are an older class of antidepressants drugs that are rarely used now. They include phenelzine (Nardil), isocarboxazid (Marplan), and tranylcypromine sulfate (Parnate). Taking phenylalanine while taking MAOIs may cause a severe increase in blood pressure (hypertensive crisis)
- **Levodopa:** A few case reports suggest that phenylalanine may reduce the effectiveness of levodopa (Sinemet), a medication used to treat Parkinson's disease.
- **Antipsychotic drugs** can interact with Phenylalanine
- These include chlorpromazine (Thorazine), clozapine (Clozaril), fluphenazine (Prolixin), haloperidol (Haldol), olanzapine (Zyprexa), perphenazine (Trilafon), prochlorperazine (Compazine), quetiapine (Seroquel), risperidone (Risperdal), thioridazine (Mellaril), thiothixene (Navane), and others.

Caution:

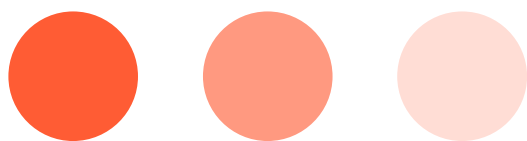
Melanoma patients should avoid taking L-phenylalanine and L-tyrosine. Certain cancers, such as melanoma, depend on these amino acids to fuel their growth.

Supplemental use of L-phenylalanine and L-tyrosine may **raise or normalize blood pressure if low**.

Insomnia may be a side effect if taken too close to bedtime.

Side Effects:

Some researchers think L-phenylalanine use can cause a number of side effects, including high blood pressure, nausea, heartburn, difficulty sleeping and mood swings, especially irritability. This is usually due to high dosing.



Perfecting Proline

L-Proline

P U R E P O W D E R

T Y P E U S E D : L - P R O L I N E

Cardiovascular Health:

- L-lysine and particularly L-proline are important substrates for the biosynthesis of matrix protein and competitively inhibit the binding of lipoprotein to the vascular matrix which **prevents cholesterol build up** and resulting arterial plaque.
- Maintaining the integrity and physiological function of the vascular wall is the key therapeutic target in controlling cardiovascular disease.

Skin Integrity and formation of Collagen fibers:

- **Proline increases the stability of collagen**, making it a desirable supplement for skin integrity as well as an adjunct treatment for osteoarthritis

Heals Wounds and minimizes scar formation:

- Proline initiates the biochemical pathway for connective tissue repair and collagen production, therefore increases wound healing and minimizes scar formation

Reduces cholesterol Plaque:

- Research from the Linus Pauling institute shows that Proline helps reduce cholesterol build up by increasing blood vessel wall elasticity and integrity. This discourages plaque formation within the arterial wall

Contraindications:

- The intake of L-proline may lead to the development of neurological problems such as seizures and intellectual disability in patients with **hyperprolinemia**, a rare genetic condition caused by the excesses in proline levels..
- If you have high levels of **lactic acid** in your blood, you are also predisposed to hyperprolinemia, because lactic acid inhibits the breakdown of proline
- People who have **chronic kidney failure** should not take any amino acid supplement without consultation with their physician
- **Smokers** should avoid proline supplements and foods that are high in nitrates. In smokers, nitrates can convert proline into the potent carcinogen N-nitrosoproline.
- People who have **alcohol-related liver disease** should not take proline, as they usually already have high levels of proline in the bloodstream. Chronic liver inflammation interferes with the body's ability to make collagen anywhere except in the liver, where proline is used to form the collagen that forms the fibers that cause cirrhosis of the liver.
- People who have **allergies** should avoid proline as it increases levels of histamine in the bloodstream

Dosage:

Cholesterol prevention:

Vit C: 3 gm, Lys: 2 gm, Proline 2 gm

Cholesterol treatment:

As above, but increasing by 50% more

Skin, joints, collagen and wound healing:

2 – 5 gm daily



Serine Serine

Serine

P U R E P O W D E R

T Y P E U S E D : L - S E R I N E

Did you know? *The women of the Ogimi village in Japan, whose average life expectancy exceeds 85 years, consume extraordinarily high amounts of the L-serine containing foods, seaweed and tofu, as staples in their diets?*

Neuroprotection and Diabetic support

Researchers believe that high serine levels in the body may offer neuroprotection and contribute to longevity. Studies using L serine have proved promising in the treatment and prevention of diabetes and insulin sensitivity. In the studies of altered metabolism in type 1, type 2 and gestational diabetes, L Serine supplementation improved glucose homeostasis and mitochondrial function and prevented neuronal death.

Improving Memory and Dementia

Serine plays an important role in brain function and the health of the central nervous system. A function of serine is the formation of phospholipids and phosphatidylserine, a lipid that may improve memory and help prevent dementia and prevent Parkinson's disease

Improving Sleep and anxiety

L Serine has hypnotic, anxiolytic and sedative properties and may be used by those with anxiety driven sleep disorders. Interestingly, when taking drugs such as Temaze for sleep, rebound insomnia and daytime drowsiness is common, particularly after long term. One study has shown, even after discontinuing Serine after using for 1 month, the improvements in sleep quality and reducing sleep latency persist.

Liver detoxification

Being a precursor to various amino acids such as glycine and cysteine, serine may also aid with GABA production, homocysteine modulation, methylation and trans sulphuration

Dosage:

Sleep disorders: 3 gm 30 mins before bed is considered a therapeutic dose.

Neuronal and methylation support: 3gm-8gm daily

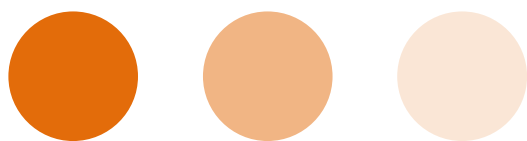
Serine is generally regarded as safe (GRAS) and up to 8gms per day in divided doses may be consumed.

Note: The diet of Ogimi women contain around 8gm of serine from foods per day.

Tips and tricks: Take Serine with ½ teas Glycine before bed as a shuttle to aid with cell uptake. Folic acid and B group aid in serine conversion so ensure dietary levels of B/Folic acid are adequate.

This information is for practitioner training purposes only.





Tantalizing Taurine

Taurine

P U R E P O W D E R *

T Y P E U S E D : L T A U R I N E

Athletic Performance:

- Taurine increases muscle contractility in both skeletal and cardiac muscle, meaning **better workouts** due to increased muscle output
- Taurine helps exercising muscle rid itself of **lactic acid** and protects muscle against oxidative stress which, in turn, reduces muscle damage
- The levels of some amino acids in muscle cells can rise when taking Taurine, specifically **glutamine and the BCAAs valine, leucine and isoleucine**. It may be that Taurine raises the concentration function of glycogen precursors.

Diabetes and Diabetic complications:

- Taurine supports nerve fiber integrity, potentially slowing or reversing painful diabetic **neuropathy**.
- In the retina, another target of destructive elevated blood glucose, taurine fights glucose-induced oxidant stress and preserves the health of light-sensing cells in diabetic **retinopathy**.
- Human studies show that **3 grams** per day of taurine for 7 weeks reduced body weight significantly in a group of overweight or obese (but not-yet-diabetic) adults. Subjects saw significant declines in their serum triglycerides and “atherogenic index,” a ratio of multiple cholesterol components that predicts atherosclerosis risk.

Heart Health:

- Taurine may help treat **high blood pressure**, according to a 2002 report published in Amino Acids. Looking at data from preliminary research, the report’s authors found that taurine supplementation may lead to significant decreases in blood pressure
- Supplementing with Taurine may help **reduce levels of** homocysteine
- A study of patients needing coronary bypass surgery showed that consuming a liquid drink containing **3 grams** of taurine, combined **with 3 grams** carnitine, **150 mg** CoQ10, and basic multivitamin nutrients, reduced left-sided ventricular volume during the heart’s resting phase (diastole). Increased left-ventricular diastolic volume is the single greatest predictor of death in patients requiring bypass or stent placements. This makes taurine a vital component of such patients’ diets.

Liver Health:

- Human studies reveal the impact of taurine on liver disease. When 24 patients with chronic hepatitis took 2 grams of taurine 3 times daily for 3 months, serum markers of liver damage, as well as markers of oxidative stress, decreased significantly, as did their elevated levels of **cholesterol and triglycerides**.

Neurotransmitter Support:

- Relieving **panic attacks** and **anxiety** due to **GABA** effects of Taurine. Studies corroborate the neuromodulatory role of taurine in the brain. Taurine administration results in an increase of inhibitory and a decrease of excitatory neurotransmission in the glutamatergic (hippocampus) and GABAergic (striatum) brain structures, affecting more markedly the neurotransmitter precursors.

Dosage

- **3-5 grams** for panic attacks, anxiety
- **3-5 grams** for homocysteine, heart and diabetes support
- **6 grams** for athletes (in divided doses)

Note: HealthWise® Taurine contains 99.5% pure pharmaceutical grade Taurine. Less than 0.5% silica is added as an excipient.

This information is for practitioner training purposes only.



Temperate Theanine

L-Theanine

P U R E P O W D E R

T Y P E U S E D : L T H E A N I N E
G A M M A G L U T A M E T H Y L A M I D E

What is Theanine?

L-Theanine is an amino acid that is not typically found in the diet and additionally, is not one of the essential amino acids or one of the common nonessential amino acids, however is unique to green tea and certain mushroom species. L Theanine, therefore, is deemed a non dietary amino acid similar to L-Ornithine or L-Citrulline. The molecular structure of Theanine is similar to glutamine and produces the neurotransmitters: **GABA and glutamate.**

How does L Theanine work?

Theanine, when incorporated into the brain, reportedly acts on the glutamate transporter, where, in the neurons, it **converts to Glutamine** with the assistance of glutaminase. From there, L Theanine becomes decarboxylated into γ-amino butyric acid (GABA) which also occurs within the neurons. This indicates that L Theanine **modulates GABA production** from Glutamine in the brain. L-Theanine molecules are small enough to pass through the blood-brain barrier in around half an hour which is why some people prefer L Theanine over GABA which has a poorer BBB passage rate.

What is Theanine used for?

The properties of L-Theanine can be summed up as being a **relaxing agent** without sedation, and studies have also shown it **reduces the perception of stress** and slightly improves attention. While L-Theanine does not appear to induce sleep, it may (quite weakly) help with sleep maintenance although it is not recommended as first line treatment for insomnia. (see L- Tryptophan)

L-Theanine is known to block the binding of L-glutamic acid to glutamate receptors in the brain. This characteristic of L-Theanine suggests that it **may influence psychological and physiological states under stress**

L-Theanine has an interesting supplemental role in attenuating the 'edge' of many stimulants. A combination of L-Theanine with caffeine (200mg each) synergistic in **promoting cognition and attention**. Other attributes from L Theanine include **thermogenesis and liver detoxification**



Temperate Theanine

L-Theanine

P U R E P O W D E R

Safety, Cautions and Side Effects:

L-Theanine is GRAS (generally regarded as safe)

Theanine recommended to be taken by those who are generally highly anxious, but not suited to those who are already a laid-back type, or if someone presents with low serotonin levels. While small amounts of L-theanine won't affect most users, a dosage of 1500 mg or more a day may reduce serotonin, potentially causing side effects including brain fog, depression, and low energy. Dizziness, nausea, and headaches are a common side effect evident in clinical studies of L-Theanine. Reduced appetite is another, sometimes welcomed, side effect!

Contraindications:

Low Serotonin, SSRI medications, Pseudoephedrine, epinephrine and other stimulant drugs may be decreased in effectiveness when taken with L theanine

Dosage:

300mg-500 mg taken in water or juice away from meals, preferably in divided doses. May also be taken with caffeinated beverages

Tip: Start with 1/8 teas Theanine, then work up to ¼ teaspoon in approx 2 weeks. Glycine may be added to theanine at ¼- ½ teas to enhance bioavailability.



Thorough Threonine

L-Threonine

P U R E P O W D E R

T Y P E U S E D : L - T H R E O N I N E

Athletic use:

- Threonine keeps tissue strong to facilitate faster healing
- Threonine is needed to create **glycine** and **serine**, two amino acids that are necessary for the production of collagen, elastin, and muscle tissue.
- Threonine is also found in significant amounts in the **heart**.

Liver Function:

- Threonine combines with the amino acids **aspartic acid** and **methionine** to help the liver with the digestion of fats and fatty acids.

Nervous System Disorders:

- Threonine supplementation may be useful in the treatment of Lou Gehrig's disease, Amyotrophic Lateral Sclerosis (ALS) and other diseases that present with Glycine deficiency. Administering glycine directly is ineffective, since it cannot cross into the central nervous system. Using threonine facilitates this shuttle.
- Research indicates that symptoms of Multiple Sclerosis (MS), another disease that affects the nerve and muscle function, may be lessened with Threonine supplementation

Uric acid reduction:

- Uric acid accumulation in the body predisposes the body to **Gout**. Threonine,, along with glycine, are important compound for the **removal of purines**, compounds that break down into uric acid, which itself is a by-product of protein digestion in the human body.

Dosage:

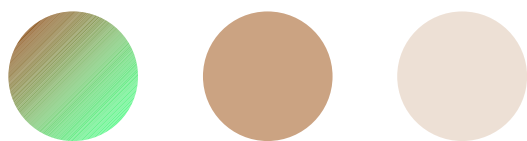
- When taken in dosage of anything between 2 and 4 grams every day for a maximum period of about 12 months the use of threonine appears to be safe. However, some people using this essential amino acid may suffer from negligible side effects like headache, stomach disorder, queasiness and skin rash.

Nervous System Disorders: ALS, MS; Depression

One 1992 study showed that 7.5 grams of threonine taken daily decreased spasticity among study participants. Individuals suffering from clinical depression can also benefit from using dosages consisting of one gram of threonine twice daily

Healthwise® **NAKED**
AMINOS

NOTES



Tranquil Tryptophan

L-Tryptophan

P U R E P O W D E R

T Y P E U S E D : L - T R Y P T O P H A N

naturally fermented at low temperature

Tryptophan is the precursor to 5-hydroxytryptophan (5-HTP) which is the direct precursor to serotonin. **Serotonin** is important for mood and sleep; when deficiency of serotonin occurs, it can lead to **anxiety, depression, insomnia**, and various other neuropsychological conditions. L Tryptophan works in about 50% of insomnia cases, other cases are possibly not melatonin related. Tryptophan is also the precursor for **vitamin B3** in the form of nicotinamide adenine dinucleotide (NAD). Only about 1/60th of the tryptophan in the body is actually converted to NAD.

What conditions respond to Tryptophan?

Mood and Insomnia

- Mood disorders, PMT, sleep and other conditions directly affected by reduced Serotonin production and uptake

Skin:

- Because it is a **precursor to B3**, Tryptophan may also be useful for dermatitis and pellagra

Weight loss:

- Tryptophan **decreases carbohydrate cravings**, and, because of its ability to convert into B3, helps with the metabolism of fats, carbohydrates and proteins

Addictions:

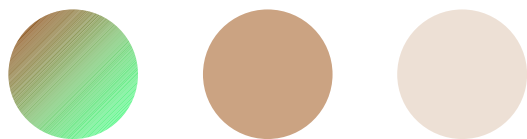
- Sleep problems associated with addictions, including alcohol

Absorption into the Brain:

The brain typically receives **less than one percent** of ingested tryptophan. However, getting even this small share of tryptophan is a difficult task for the brain, due to the blood brain barrier (BBB). The BBB makes it hard even for brain essential nutrients to enter the brain. Serotonin by itself cannot penetrate the BBB, but its precursor, tryptophan, can. Nutrients must be ferried through the BBB by transport molecules, and unfortunately for the serotonin-using nerves, tryptophan must share its transportation route with five other amino acids: tyrosine, phenylalanine, valine, leucine and isoleucine. Taking a supplement therefore, increases the chance of uptake into the brain which food alone may not be able to achieve.

Heat sensitivity and solubility:

Tryptophan is heat sensitive and losses in cooking range from between 65% in pork and 46% in chicken that have been cooked by either frying, roasting or grilling. Therefore it is wise not to mix Tryptophan powder in with very hot water. This is unfortunate as tryptophan can have solubility issues, but this can be resolved by being vigilant in using heated water (see Tips N Tricks) or encapsulating the product. Using tryptophan as a powder is preferable; however it has a very light molecular weight of 1gm per 5 ml teaspoon.



Tranquil Tryptophan

L-Tryptophan

P U R E P O W D E R

Beware Serotonin Syndrome:

This is where there is an excess tryptophan or 5-HTP levels, usually as a result of combining with prescription antidepressants. Signs and symptoms include: [Agitation, confusion, delirium, tachycardia, blood pressure changes](#).

Medication Contraindications:

- **Fluoxetine and Related Selective Serotonin Reuptake Inhibitor and Serotonin-Norepinephrine Reuptake Inhibitor (SSRI and SNRI) Antidepressants** - Additive effect can result in rapid onset of severe symptoms but might also be applied purposefully within a tightly managed therapeutic protocol. Generally avoid concomitant use or under close supervision with a healthcare professional.
- **Phenelzine and Related Monoamine Oxidase Inhibitors** - Concomitant use carries high probability of resulting in clinically significant serotonin excess and major risk of serious adverse effects. Avoid concomitant use.
- **Sibutramine and Other Serotonin Agonists** - Concomitant use can lead to clinically significant serotonin excess and major risk of serious adverse effects. Avoid concomitant use.
- **Tricyclic Antidepressants** - Tryptophan can increase the action of TCAs. This additive effect can result in rapid onset of severe symptoms but might also be applied purposefully within a tightly managed therapeutic protocol.

Contraindicated with:

Achlorhydria (diagnosed), bladder cancer, diabetes mellitus, female infertility, psoriasis

Possible side effects:

Anorexia, dizziness, headaches, dry mouth, mild hallucinations, nausea

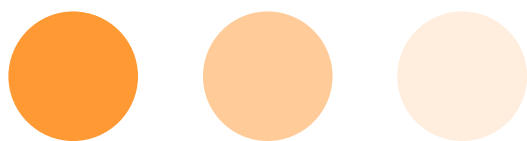
Dosages:

Anxiety, Depression and PMT: 1-3 gram in divided doses in capsule form or in water between meals. Take with a small amount of carbohydrate to shuttle into the BBB.

Weight Loss and Skin: 1-2 gram in divided doses in capsule form or in water between meals. Take with a small amount of carbohydrate to shuttle into cells.

Insomnia: 1-3 gram 1 hour-30 mins before bed with a small amount of carbohydrate

Some studies show Tryptophan is safe up to 15 gram, however stick to maximum dose of 3 grams to prevent serotonin syndrome and lesser side effects such as headaches



Tenacious Tyrosine:

L-Tyrosine

P U R E P O W D E R

T Y P E U S E D : L T Y R O S I N E

Athletic Uses:

- Supplements that boost the brain's dopamine concentration are of interest to endurance athletes. Some research has suggested that tyrosine might have a positive effect at a **high temperature**.
- At high temperatures athletes tire more quickly, so having more Tyrosine available may reduce feelings of tiredness
- Dopamine is the neurotransmitter that motivates people to continue and **suppresses feelings of fatigue** and is activated at high temperatures

Cognitive function

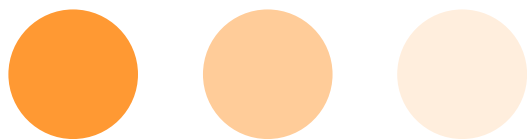
- A 2007 study of 19 people (published in *Physiology & Behavior*) found that use of tyrosine supplements helped protect against the detrimental effects of severe cold exposure on cognitive performance and memory.

Depression and mood disorders

- L Tyrosine is an amino acid **precursor** of the neurotransmitters **norepinephrine** and **dopamine**. Taking tyrosine on an empty stomach causes an increase in norepinephrine and dopamine in the brain, which can lead to increased energy, alertness and improved moods, thus relieving depression.
- Unlike St John's wort, that can take two months to work, and prescription antidepressants, which may not work for about six weeks, tyrosine works very quickly.
- **Improving Thyroid function** can be a useful adjunct in the treatment of depression. As a precursor of the thyroid hormones thyroxine and triiodothyronine, L tyrosine can help to elevate mood and promote well-being that is hindered by low thyroid

Addictions:

- Brain reward Cascaded pathways are governed by Serotonin, GABA and dopamine.
- Dopamine is a modulating neurotransmitter synthesized in the brain as a monoamine and in the adrenal medulla as a catecholamine which governs positive reinforcement and reward, addiction, focus and mood. Disruptions occur when dopamine, noradrenaline or serotonin are imbalanced or insufficient in the synaptic cleft due to impaired neurotransmitter release.



Tenacious Tyrosine:

L-Tyrosine

P U R E P O W D E R

Cautions:

- Tyrosine can raise blood pressure in some people, it must be used cautiously by individuals with hypertension and can also cause anxiety
- **Monoamine Oxidase Inhibitors (MAOIs)** -- Tyrosine may cause a **severe increase in blood pressure** in people taking antidepressant medications in the MAO family. This rapid increase in blood pressure, also called "hypertensive crisis," can lead to a heart attack or stroke. People taking MAOIs should avoid foods and supplements containing tyrosine. MAOIs include:

1. Isocarboxazid (Marplan)
2. Phenelzine (Nardil)
3. Tranylcypromine (Parnate)
4. Selegiline

Thyroid hormones

- Tyrosine is a precursor to thyroid hormone, so it might raise levels too high when taken with synthetic thyroid hormones. (Monitor)

PKU (phenylketonuria)

- This serious condition occurs in people unable to absorb phenylalanine. It can lead to brain damage, including intellectual disability. People with PKU must avoid any phenylalanine in their diets. Because tyrosine is made from phenylalanine, people with PKU can be deficient in tyrosine, although taking Tyrosine may only increase blood tyrosine concentrations and treat true deficiency.

Interactions:

- **Levodopa (L-dopa)** -- Tyrosine **should not** be taken at the same time as **levodopa**, a medication used to treat Parkinson's disease. Levodopa may interfere with the absorption of tyrosine.

Dosage

Thyroid Function and Mood disorders:

- **500-1000 mg twice daily**
- Take L Tyrosine **at least 30 minutes before meals**, divided **into 2-3 daily doses**. Taking vitamins B6, B9 (folate), and copper along with tyrosine helps the body **convert tyrosine** into dopamine. (see tips & tricks handout)

How to make the most of your HealthWise® Amino Acids

Tips for best results:

- Use your weight chart for correct dosage
- Most amino acids are thought to be absorbed best when taken:
 - on an **empty stomach**
 - With an insulin shuttle such as **juice or coconut water**
 - **between meals** and
 - **in divided doses**

However there are always exceptions to the rule and there may also be several co factors that are required for the uptake of amino acids which will be listed below each individual amino acid

- **Most amino acids will be well tolerated** by the general population. Some individuals however, can experience stomach upsets and nausea which dictates that these aminos may be taken with meals, although this is said to reduce absorption and uptake in cells due to the competitiveness of other amino acids.
- Store aminos in a cool, dry area away from light
- Some nutritionally oriented physicians contend that in order to prevent an imbalance of amino acids in your body and give your system a periodic break, you should take an amino acid complex along with any single amino acid that you're on for more than one month for a 2 week period then resume your single amino acid treatment. This is not standard practice however.

General information on free form - L ,DL, Acetyl form – amino acid bioavailability

- Unlike protein meals or protein powders, Crystalline, or free form amino acids, are absorbed into the bloodstream and available to tissues within 20 minutes of ingestion, requiring no digestive processes for absorption
- Amino acids compete for uptake into the body. They are most efficacious when taken under the tongue on an empty stomach where they are then absorbed directly into the bloodstream. Alternatively, mixing in fruit juice or coconut water is equally effective, particularly when wanting to transport a free form amino acid through the blood brain barrier .
- All protein foods are made up of amino acids, so if a free form amino acid needs to be taken with food because of nausea concerns, and/or for convenience, chose a carbohydrate food or liquid. Otherwise, allow at least 20 mins before a meal or ingesting another amino acid
- Only the Acetyl form of amino acid passively travels to the brain through the blood brain barrier (BBB) unaided; the free form aminos need to be actively carried through and competition to the brain from other amino acids is fierce. The amino acids tryptophan, tyrosine, phenylalanine and inositol are very competitive with each other.
- Research suggests amino acids are more receptive to muscle tissue post exercise when nutrient uptake is enhanced by increased blood flow



L Arginine HCL:

Tips for GH production:

L-arginine, or L-arginine hydrochloride, taken on an empty stomach, will cause a significant release of growth hormone in many people.

L-arginine is most effective as a growth hormone releaser for people between the ages of about 25 to 45. It is necessary, however, to use a very large dose of arginine: 10 to 30 grams, depending upon many factors such as one's age and body weight

Tips for effectiveness:

Arginine levels can best be maintained by not taking it continuously. A schedule of something like four weeks of continuous use followed by a two-week break generally works best. When carbohydrates are present in large amounts, particularly when combined with high temperatures (like post workout), it can be rendered nutritionally unavailable to the body, so take well away from carbohydrate based meals.

L Arginine works synergistically with L Citrulline to further enhance NO production. As Arginine can exacerbate Herpes Simplex virus, it is suggested that those who suffer with cold sores take L Citrulline instead



Acetyl L Carnitine:

Best time of day to take Acetyl L- Carnitine:

Best taken in the morning before breakfast. ALACR works well mixed with magnesium powder. Can be taken alongside L Carnitine to boost testosterone levels and alpha lipoic acid for heart health



L Carnitine bi-tartrate:

Tips for Absorption:

Absorption is the key for maximum effects in fat loss. Insulin is the most effective agent at helping more L-carnitine get inside muscle cells. So, by combining L-carnitine with an insulin-elevating juice or carbohydrate snack, you can ensure maximum carnitine retention in muscle cells.

Best time of day to take L-Carnitine:

It all depends on your primary goal. If your main concern is fat loss, then it's best to take carnitine before your largest meals of the day. If your primary goal is muscle growth, performance, or recovery, then you're best to take carnitine before and after your workouts with some insulin-spiking carbs

An effective dosage of L-carnitine tartrate is 1,000 to 2,000 milligrams daily, usually split up into two servings



L Choline bi-tartrate:

Tips for Fat Loss

For fat loss, take pre or post exercise on an empty stomach. Choline works by lipolysis, so best taken during the day.

Tips for Brain Function

Choline bitartrate is difficult to convert to Acetyl Choline in the brain, but some people have found success using choline bitartrate to promote lucid dreaming and enhance REM sleep. Even using choline for this purpose, it is **better to take during the day** as Choline at night is known to keep some people awake.



L Citrulline Malate

Tips for stacking with Arginine

Citrulline Malate may be taken to increase the effectiveness of Arginine supplementation as Citrulline bypasses the processes that convert arginine to NO within the liver. Consider taking Citrulline Malate and Arginine 20 mins apart for optimum plasma levels of Arginine. Doses over 5gm of Citrulline Malate may cause stomach upsets. Preferred NO producing supplement for those who harbor the herpes virus.



N Acetyl Cysteine

Special tips:

Regular supplementation with NAC will increase the urinary excretion of copper, so if you're using NAC for an extended period of time, it's probably wise to add both copper (2 mg a day) and zinc (30 mg a day) to your treatment regimen.

If you use NAC for more than a month, add a mixed amino acid complex to your treatment regimen to ensure that you are getting adequate, balanced amounts of all the Amino acids.

Tips for absorption of NAC:

NAC is most effective when taken on an empty stomach, with a small amount of vitamin C powder. Vit C enhances the conversion of NAC to Glutathione.

If you've added a mixed amino acid complex to your NAC regimen, be sure to take it on an empty stomach as well, but at a different time of day than you take the NAC.

As the Acetyl portion of the amino acid is quite irritating to the teeth, taking it through a straw is advised, and it also makes it more palatable

Special caution: Evidence indicates that in some healthy individuals, high doses of NAC (3,000 mg a day) can act as a pro-oxidant rather than an antioxidant, actually lowering levels of glutathione rather than increasing them. For this reason, otherwise healthy individuals may want to avoid taking high doses of NAC until more information is available.



Gaba

Always start with a low dose of GABA to assess suitability.

1/8-1/4 teaspoon is recommended away from meals with an insulin carrier such as juice.

An activated B complex in the morning is recommended.

Precautions whilst using GABA

GABA may illicit unexpected effects on certain individuals which can include tingling and numbness of the extremities, a feeling of disconnectedness and heart palpitations.

These effects usually last around 10 minutes, and, with maintained use of GABA; usually disappear in a few days. Occasionally, however, these initial episodes can last up to 4 hours or more, which is obviously very uncomfortable and sometimes frightening for the consumer.

These effects can happen on a very low dose such as ¼ teaspoon, the recommended starting dose of GABA.

Additionally, GABA can cause “paradoxical reactions” such as feeling edgy, anxious or even leading to insomnia in some individuals, usually those who have low serotonin rather than low dopamine neurotransmitter levels.

For sensitive individuals, 1/8 teaspoon is recommended as the daily starting dose alongside a probiotic regime as poor gut bacteria may exacerbate unwanted side effects from GABA.

If unwanted effects prove intolerable to the consumer, at 1/8-1/4 teaspoon, discontinue use immediately as GABA may not be the amino acid suitable for that individual.



N Acetyl D Glucosamine HCL:

May be taken together with Threonine, glutamine and glycine for gut repair, celiac treatment and/or ulcerative colitis. Is heat stable.



Glucosamine HCL:

Absorption:

83% HCL VS 63% Sulphate, HCL is the original form of glucosamine. May be taken with or without food, but high doses are not to be taken (anything over 1500mg) by diabetics.

May be taken with food.



L Glutamine:

Tips for absorption for stomach ailments:

Take it three times a day in divided doses on an empty stomach as it is sensitive to stomach acids

The best times to take it are in the morning, after a workout and before going to bed. Taking glutamine when you wake up is ideal because your muscles have gone all night without nutrition.

Tips for absorption for sports performance :

Taking it after a workout helps the muscles recover.

Taking it before bed helps increase growth hormone in your body.



Glycine

Best time to take Glycine:

Though Glycine can be absorbed from food, it would be difficult on an ordinary diet to absorb enough to saturate the blood. At saturation levels, Glycine readily crosses the blood brain barrier via passive diffusion.

A supplemental dose of 3 g before bed readily accomplishes this.

For Creatine conversion:

Glycine is best taken away from meals or pre workout if you are desiring it to convert to creatine



Inositol

Tips for Anxiety/OCD treatment:

If you take Inositol for anxiety/OCD, medical professionals advise starting with 2,000 mg twice a day. After one week, this can be increased to three times per day. During the third week, you can slowly begin to increase the Inositol by small amounts to 3,000 mg three times daily; the fourth week, to 4,000 mg three times per day; and the fifth week, 5,000 mg three times each day. In the sixth week, you will reach a suggested maximum dosage of 6,000 mg three times a day.

You may find that using Inositol on its own may not be enough to treat anxiety. Many take it in conjunction with Omega-3 supplement, valerian root, and passionflower to enhance the effects.

There are a few side effects to watch out for when taking this supplement, although stomach upsets may occur, but studies have shown this to be a relatively normal side effect . Some users report that their appetites greatly increased after starting an inositol regime

There is some evidence to show that caffeine interferes with inositol uptake.

Best time to take Inositol:

There is conflicting evidence whether this amino acid can be taken all at once, in divided doses, with or without food, but it seems best absorbed in the morning before breakfast.

Inositol does not dissolve very well, so it needs to be stirred, and drunk while the water is still in motion.



L Lysine

L Lysine has no known toxicity. Although a few cases of abdominal cramps and diarrhea have been reported with very high doses (more than 10 grams a day).

Best way to take Lysine:

If you feel a virus coming on, take 1 Lysine every hour for 8 hours or until symptoms desist.

Lysine is best taken on an empty stomach - but if you have forgotten a serving, you may take it with food.

Postmenopausal women can take Lysine with meals to encourage absorption of calcium by the body.

For cold sores: Take 1,000 mg L-Lysine three times a day with meals for flare-ups. If you are subject to recurrent outbreaks of cold sores, continue on a maintenance dosage of 1,000 mg day.



L Methionine

Tips for absorption:

During methionine supplementation, intake of taurine, cysteine, and other sulfur containing amino acids, as well as P5P and folate/folinic acid should also be included. Taking it with a tablet for liver support would be ideal.

Recommended dosage of L-Methionine:

Dosage ranges from 500 mg to 4,000 mg in divided dosages throughout the day, away from meals

Remember that those with high homocysteine should only take 2 grams a day



L Ornithine:

Best time to take for performance:

Studies show Ornithine reduces ammonia concentrations in the blood and thus enhances performance of prolonged exercise (45 minutes or more) which is in part due to Ornithine remaining elevated in the blood for a few hours after ingestion. On this basis, it is suggested pre workout or between meals for reducing excess ammonia.

Best time to take when on a parasite treatment program:

For parasites or in combination with Arginine (2 arg: 1 Orn ratio) for GH production, take before bed on an empty stomach with juice or coconut water



L Phenylalanine

Special tips:

Those with high blood pressure, should start with very low amounts, such as 200 mg a day. Increase the dose slowly only if safe to do so.

L Phenylalanine is best taken on an empty stomach with water or juice about an hour before meals. Phenylalanine is one of the most unstable amino acids when other amino acids are present

Handy Tip:

At recommended doses, DLPA occasionally causes mild side effects, such as heartburn, nausea, or headaches. This can be prevented by taking it with a full glass of water. At excessive doses (more than 1,500 mg a day), it can cause numbness, tingling, or other signs of nerve damage over a period of time



L Proline

Tips for absorption:

For muscle repair and connective tissue disorders, use with powdered vitamin C and bioflavonoids. Combining Lysine and Proline together is recommended for connective tissue support. Magnesium and P5P can increase absorption in tissue



Taurine

Tips for absorption:

Taurine is found in pre and post workout formulas, and in sugar laden energy drinks, so the general consensus is out on the best time to take it and whether it needs an insulin spike or not to allow it to enter cells.

Magnesium powder may be added to Taurine when helping support the heart and nervous system



Theanine:

Tips for reducing sleeplessness

Although Theanine does not directly assist with sleeplessness, it does have a calmative effect and can be a good preparation in the hours before retiring, rather than immediately before bed. Unlike Tryptophan which works immediately on Serotonin and can be taken last thing at night, Theanine may increase alertness and would benefit by being taken earlier.

Tips for meditation

Theanine boosts Alpha brainwaves – the predominant brainwaves used for meditation - and can be an effective tool to enhance meditation practices.



L Threonine

Tips for absorption:

Threonine is the transporter of Proline for people with certain auto-immune conditions such as MS, who have difficulty in absorbing Proline as an amino acid however they are able to take Threonine to assist with the conversion.

Synergistic nutrients are magnesium, B6 and niacin



L Tryptophan

For anxiety, depression and sleep, take 1hr-30 mins before bed. Taking Tryptophan off the spoon followed by coconut water or juice is a great way to absorb Tryptophan as it has low solubility in water.

Ensuring the body has adequate P5P, Niacin and magnesium levels are essential for the absorption of Tryptophan. If methylation is an issue, always take an activated B complex in the morning

Low degree heated water (up to 30 degrees) will aid solubility if unable to take off a spoon. Excessive heating is not recommended as it will affect the stability of the product.



Tyrosine:

Tips for neurotransmitter production:

L-Tyrosine should be taken before meals, preferably 30 minutes before, and divided into two or three doses daily, with juice or coconut water

Tyrosine supplements are best taken with a B group or multivitamin/mineral complex because vitamins B6, B9, folic acid and the copper mineral help in the conversion of L-tyrosine into neurotransmitters

P5P, Vit C, B9, folate and selenium aid in the conversion of L-tyrosine into dopamine