

Nutrex Research Outlift AMPED: Become Unstoppable With High-Stim Energy!

written by Mike Roberto | July 14, 2020



Nutrex Research has made some major changes the past few months, and with the launch of the *Warrior Series*, we're continuing to cover their powerful product lineup! We recently broke down the new **NIOX** label (it's a *non-stim pump formula*) as well as **Alpha-T** (a *clinically-dosed natural testosterone booster*).

The *Warrior Series* features several new products, with the most notable one being *Warrior Pre Workout*, but it also brought in some supplements from Nutrex that were either reformulated or just updated with the new look, such as *Vitadapt Complete*, *Alpha Pump*, and *EAA+ Hydration*. In this article we're focusing on **Outlift AMPED** and its *brand new flavor* – **Cola Soda!**

If you're a *Nutrex Warrior*, then chances are *Outlift* is one of your top pre workouts. There are a few variations of *Outlift* that cater to different people and experience levels. Nutrex offers the original *Outlift*, which contains clinically-studied ingredients at generous dosages, and then there's *Outlift Natural*, which has the same formula but doesn't use any artificial colors, flavors, or sweeteners.

But don't forget about the *Amped* version!

OutLift Amped: New Look, New Flavor, Same High Energy Formula!



OutLift Amped is not a new product, but it does have a brand new look!

Finally we have **OutLift Amped** – a pre workout that kicks things up a notch with *350mg of caffeine from two different sources, 50mg of TeaCrine, and 1.5mg of alpha-yohimbine*. Nutrex Research said the Warrior Series was developed for the more *advanced* and *serious* consumer, so it's only right to have a *high-stim powerhouse* included in the lineup!

The *new look* also further helps consumers differentiate between standard Outlift and Outlift Amped. Although Nutrex added OutLift Amped to the Warrior Series and redesigned the label, it still has the *same formula* that we all know and love – not to mention, it now comes in an interesting new flavor – *Cola Soda* – which we're most excited about!

A cola soda pre workout flavor?! We've got to try this...

Nutrex is known for producing some delicious and refreshing flavors and if they can pull off this one, it will be quite an impressive feat. Keep reading for our full review of Outlift Amped's formula and our thoughts on Cola Soda. As always, If you want to get insane prices on incredible products from Nutrex Research, then make sure to sign up for their *news and deal alerts*!

Nutrex Outlift Amped – Deals and Price Drop Alerts

Get Price Alerts

Get Outlift Amped Price Alerts Get Nutrex alerts Get Pre Workout Supplements price drops

☐ Also get hot deal alerts

No spam, no scams.

Disclosure: PricePlow relies on pricing from stores with which we have a business relationship. We work hard to keep pricing current, but you may find a better offer.

Posts are sponsored in part by the retailers and/or brands listed on this page.

Nutrex Research Outlift Ingredient Analysis

Nutrex Research formulated Outlift Amped to give you *maximum performance, high-stim energy, unparalleled strength, intense pumps, and laser focus!* This is a comprehensive pre workout supplement that has everything you need to crush a grueling workout. Outlift Amped will help you push beyond your limits and show you what a properly formulated pre workout is made of.

With over 10 ingredients, a fully disclosed label, clinically proven dosages, and great tasting flavors, we can almost guarantee that OutLift Amped will be one of your top pre workouts, so let's see what each ingredient can do!

Here's what *one scoop (21.9g)* of Outlift Amped delivers:

- **Citrulline Malate (2:1) – 8g (yielding ~ 5.33g of L-Citrulline)**

The first ingredient in Outlift Amped is **citrulline malate** in a 2:1 ratio, meaning it will deliver approximately 5.33g of *L-citrulline*. Not only is this ingredient great for pumps and performance, that's the dose we like to see it at for maximum results.[1,2] L-citrulline is a naturally occurring amino acid that's found in several foods, but most notably – *watermelon*.

SUPPLEMENT FACTS		
Serving Size: 21.9g (Approx 1 scoop)	Servings Per Container: 20	
	Amount per serving	%DV
Magnesium (from Magnesium Creatine Chelate)	160mg	40%
Sodium	190mg	8%
Citrulline Malate (2:1)	8g	*
Beta-Alanine (as CarnoSyn®)	3.2g	*
Betaine Anhydrous	2.5g	*
Magnesium Creatine Chelate (as Creatine MagnaPower®)	2g	*
Taurine	2g	*
N-Acetyl-L-Tyrosine	750mg	*
Choline Bitartrate	500mg	*
Caffeine (Active)	350mg	*
Kaff Citrate™ (yielding 200mg caffeine)		
Caffeine Anhydrous (yielding 150mg caffeine)		
Theacrine (as TeaCrine®)	50mg	*
BioPerine® ((Piper nigrum extract)(fruit))	5mg	*
Rauwolfia (Rauwolfia vomitoria) extract (root)	1.5mg	*

* Daily Value (DV) not established.

Fully loaded with high stim energy!

Once L-citrulline is ingested, the body converts it into *L-arginine* within the

kidneys. L-arginine then gets transformed into *nitric oxide* via *nitric oxide synthase (eNOS)* – it also forms *citrulline* as a by-product – then the cycle repeats itself.[3,4] Our main objective here is to *boost nitric oxide (NO) levels*, since that leads to *vasodilation* of the blood vessels, allowing more nutrients, blood flow, oxygen, and metabolic waste removal to occur within the working muscles.

Greater blood flow gives you an epic pump, but it also improves your muscular endurance – so you can work harder, for longer! And the more reps you can do before exhaustion, the more muscle mass you can pack on.

It's important to note that there are several pure L-arginine supplements on the market, however they're not nearly as effective at boosting endogenous arginine levels as L-citrulline because a large portion of the arginine gets metabolized by the digestive system before entering the bloodstream and carrying out its effects.[3,4] If that wasn't the case, it would make sense just to supplement with L-arginine, since it's a more direct pathway but, unfortunately it doesn't work that way. So we bring the L-citrulline (or L-citrulline malate) for the *real pumps*.

- **Beta-Alanine (as CarnoSyn) – 3.2g**

Whether you love the **beta-alanine** tingles or not, you can't deny that this ingredient is a well-studied *ergogenic aid!* While many brands use the *generic form* of beta-alanine, Nutrex Research decided to with *CarnoSyn beta-alanine* – a trademarked ingredient from *Natural Alternatives International* that's rigorously tested for *purity, potency, and safety*.[5] CarnoSyn is *self-affirmed GRAS*, meaning that it's generally recognized as safe![5]

Now that you know that this is a high quality ingredient – what can it do?



Beta-alanine is a *non-essential amino acid* that's found in several foods, but also produced naturally within the body. The compound is involved in a variety of physiological processes, including the formation of a dipeptide molecule called *carnosine*.[5,6] Studies show that beta-alanine supplementation *significantly increases* intramuscular carnosine levels, which is the reason

why it enhances exercise performance.[5,6]

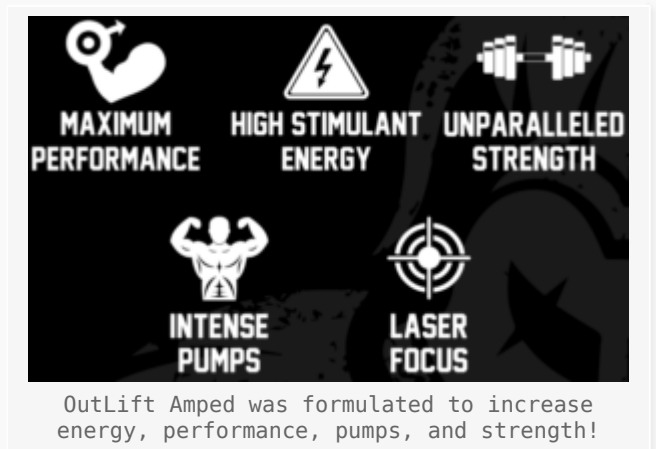
Carnosine serves as a *lactic acid buffer*, thus delaying the onset of muscular fatigue.[6] Lactic acid is a metabolic by-product that gets produced from the glycolytic energy systems and once it reaches a certain level, it slows down the synthesis of *ATP (adenosine triphosphate)*, leading to muscular exhaustion.[6]

Therefore, supplementing with beta-alanine can give you a boost in the gym, especially with exercises lasting between *1-4 minutes*. It's a great ingredient and *3.2g* will deliver the results you're looking for![6]

• **Betaine Anhydrous – 2.5g**

Get ready for a boost in power, strength, and lean muscle mass with *2.5g* of **betaine anhydrous!**

Betaine is naturally found in beets, which is where it gets its name, however in the literature you'll also see it referred to as *trimethylglycine*. Studies show that *2.5g* of betaine anhydrous supplementation can *increase performance, power, strength, endurance, and lead to improved body composition*.[7-9]



Betaine carries out its performance boosting effects by acting as an *osmolyte* and *methyl donor*. Osmolytes are organic compounds that influence the properties of biological fluids. This means that betaine is capable of *maintaining extracellular and intracellular fluid homeostasis within a cell – resulting in improved resilience to outside stressors*.[7-9]

Betaine also serves as a methyl donor because it has *three* methyl groups to spare – based on its chemical structure.[7-9] Betaine primarily donates a methyl group to a *non-proteinogenic amino acid* called *homocysteine*, as a result *methionine* is formed – a precursor to *creatine* production.[7-9]

Other preliminary research suggests that betaine enhances performance and muscle mass gain by promoting *myotube differentiation and hypertrophy via stimulating insulin growth factor-1 (IGF-1)*. [10] They also report that betaine *inhibits hypoxia induced adipokine expression*, resulting in reduced inflammation and improved muscle regeneration. [10]

In summary, Outlift Amped is starting out strong with three powerful ergogenic aids: *citrulline malate, CarnoSyn beta-alanine, and betaine anhydrous!* But one of the best ones is to come...

• Magnesium Creatine Chelate (as Creatine MagnaPower) – 2g

Creatine MagnaPower is one of the most *underrated* forms of creatine on the market, and it's a perfect addition to a comprehensive pre workout formula. As the name suggests, Creatine MagnaPower consists of *magnesium*, an essential mineral, bound (chelated) to a *creatine* molecule.



Besides caffeine, creatine is the most studied ingredient in sports supplements and has been shown time and time again that it's effective at *boosting performance, strength, power, muscle mass, and time to exhaustion*. [11-13] Creatine is naturally produced in the body by combining three amino acids – *methionine, glycine, and arginine*. It's also found in some foods, most notably red meat.

One of your body's energy systems relies on creatine to generate *ATP*, and it's most active during high intensity exercise, such as lifting weights. There are multiple forms of creatine on the market, including *monohydrate* and *HCL*, but Creatine MagnaPower really stands out because it combines two ingredients that both offer performance enhancing benefits.

Benefits of magnesium

Although it's not discussed very much, *magnesium* is crucial for optimizing endurance and overall performance. Magnesium supports several key physiological functions, including *protein synthesis, blood sugar regulation, muscle and nerve conduction, and blood pressure homeostasis*. [14] Furthermore, there seems to be a *synergistic effect* between creatine and magnesium, meaning they enhance each other's actions. [15]



Boost your performance with the help of Outlift AMPED!

It's easy to fall short on magnesium intake for the day, so getting a bit extra from your pre workout is likely beneficial. Creatine MagnaPower comes from a leader in mineral ingredient development – *Albion Human Nutrition and Minerals*. Once they discovered the synergistic relationship between magnesium and creatine, Creatine MagnaPower was born.

Research shows that an insufficient amount of mineral consumption can *significantly decrease your ability to uptake creatine*.^[15] This means that a greater amount of creatine will be excreted rather than absorbed and utilized. The decrease in bioavailability occurs because electrolytes, such as magnesium, sodium, and potassium, serve as molecular transporters for creatine and are needed for optimal uptake.^[15]

Lastly, some evidence suggests that the more physically active you are, the more magnesium you need to consume in order to get in a sufficient amount,^[16] so any little bit helps!

With this dosage, you're going to get 40% of the daily recommended value of magnesium – which should be enough to put you over the edge on top of your diet and multivitamin. On the creatine front, however, in order to get the 3-5g clinical dose, you'll need to add more elsewhere in your day.

• Taurine – 2g

Taurine is a *sulfur-containing organic compound* that offers a multitude of health and performance benefits. It's naturally produced in the body and is primarily found in the muscles, heart, brain, and eyes.

Taurine is classified as a *conditionally essential amino acid*, meaning it's not absolutely crucial to consume on a daily basis except for *stressful situations*.^[17,18] This highlights the importance of taurine for optimal exercise performance, since physical activity places the body under high amounts of stress – especially high intensity training. Taurine is known for being the “*middle man*” in several physiological processes – *it aids in bile salt production, calcium handling, and osmoregulation*.^[17,18]



Tag Nutrex on social media to be featured in their Warrior of The Week post!

A meta-analysis published in 2018 found that oral supplementation of 1-6g of taurine per day leads to a *significant improvement in endurance!*[17] Furthermore, they noted that taurine in isolation or paired with caffeine was an effective ergogenic aid, and you're getting a great dose of *both* in Outlift Amped![17]

Taurine's exercise enhancing effects are primarily attributed to its role in *calcium signaling*. The researchers theorize that it increases the amount of available calcium in skeletal *and* myocardial muscle, leading to an increase in muscular contractions – even under fatigue.[17,18] Calcium is crucial for muscular contractions, therefore this is a practical hypothesis.

In regards to health – taurine supplementation *expresses cytoprotective properties via cell membrane stabilization, detoxification, antioxidation, osmoregulation, and maintenance of intracellular calcium influx.*[18]

- **N-Acetyl-L-Tyrosine – 750mg**

First, here's what tyrosine is and how it's beneficial for exercise performance.

Tyrosine is an amino acid that the body creates from another amino acid called *phenylalanine*, it's also found in some foods, such as dairy, meat, and eggs.[19] Tyrosine is highly concentrated in the brain which makes sense because it plays a huge role in the production of multiple *catecholamine neurotransmitters, including adrenaline, noradrenaline, and dopamine.*[19]



Warrior Pre Workout and Outlift Amped share many of the same ingredients, just at different dosages!

On a very basic level, neurotransmitters are molecules that relay signals from cells – they help carry out several physiological functions and are crucial for muscular contractions. Stressful situations, such as high intensity exercise, can lead to a *significant decrease* in neurotransmitter levels, resulting in feelings of fatigue and weakness.[19]

Therefore, supplementing with an extra source of L-tyrosine will likely extend time to exhaustion by maintaining levels of catecholamines. Studies show that L-tyrosine is capable of *enhancing cognitive function, mood, focus, exercise performance, and helps you adapt to stressful situations*.[19]

Out of this entire formula, the one thing we would change is swapping out **N-Acetyl-L-Tyrosine (NALT)** for *pure L-Tyrosine*.

Overall, L-tyrosine is great, but what's the issue with NALT? Out of the two primary forms of supplemental tyrosine that exist, research shows that L-Tyrosine is *superior* to NALT due to better *bioavailability* and *absorption*.[20] Although NALT can boost endogenous tyrosine levels, L-Tyrosine does a much better job.[20] But the majority of people may not be able to tell a difference and with everything else going on in this formula, you shouldn't worry about it too much!

In addition, many may appreciate the additional *acetyl* groups provided from NALT (just like betaine is a methyl donor, this will be come an acetyl group donor). So it ultimately depends on your diet and other supplements as to which will *really* be best for you.

- **Choline Bitartrate – 500mg**

750mg of NALT will give you a slight boost in mental focus and 500mg of

Choline Bitartrate will kick things up another notch! Choline is an *essential nutrient* for performance and health – it helps *maintain the structural integrity of cell membranes, acts as a precursor to several substrates in the body, and it can be used to create betaine* – an organic osmolyte involved in *betaine–homocysteine methyltransferase* activity that contributes to the inhibition of *homocysteine* formation.[21-26]



Take Outlift Amped pre workout and IsoFit directly after to fuel recovery!

In regards to pre workouts, various sources of choline are added in order to *boost mental energy, focus, and the mind-to-muscle connection*. This occurs because supplemental choline enhances the synthesis of *acetylcholine* – the primary neurotransmitter that's present at the *neuromuscular* gap junction (where the neuron meets the muscle fibers).[22] Furthermore, research shows that acetylcholine is highly involved in the *central nervous system (CNS)*, where it *improves memory, learning, attention, alertness, and overall cognition*. [23,24]

Choline bitartrate is one of the more common forms of choline in the sports supplement industry. As the name suggests, choline bitartrate is made up of a *choline molecule bound to tartaric acid*. Once the choline bitartrate is absorbed and enters circulation, the two compounds dissociate and each carry out their own effects. The choline primarily will be used for acetylcholine production, meaning *greater focus, mental energy, and pumps due to an increase in mind-to-muscle connection!*

Caffeine (Active) – 350mg

Nutrex packed each serving of Outlift Amped with 350mg of *active caffeine* from two sources – **Kaff Citrate** and *caffeine anhydrous*. Both of these compounds have slightly different digestion rates, which will give you a quick boost in energy without making you crash mid way through!

Caffeine is the most researched sports performance supplement out there and plenty of studies concur that caffeine is an *extremely powerful ergogenic aid*. [27] Caffeine carries out its stimulatory effects by inhibiting both *adenosine* and *phosphodiesterase* from binding to their receptors. [27]

Adenosine is known for slowing down neural activity, resulting in fatigue, whereas phosphodiesterase breaks down a second messenger heavily involved in energy substrate metabolism called *cAMP (cyclic adenosine monophosphate)*. [27] All types of caffeine share the same mechanism of action, regardless of their rate of digestion, therefore Kaff Citrate and caffeine anhydrous both work on the same pathways to give you that boost in energy. Because there are some slight differences between these two forms of caffeine, let's quickly cover each one!

Kaff Citrate (Yielding 200mg caffeine)



350mg of caffeine from two different sources will have you hitting new personal bests in the gym.

Kaff Citrate is a trademarked form of caffeine citrate that was developed by *JSW Enterprise*. It consists of three compounds – *caffeine anhydrous*, *citric acid monohydrate*, and *sodium citrate dihydrate*. [28]

Although there's a lack of research on caffeine citrate in regards to exercise performance, it's primarily used in the healthcare industry for treatment of *migraines* and *apnea* – which tells us that caffeine citrate is probably *very strong and fast acting*. [28] Anecdotally, Kaff Citrate *increases energy levels*

- *much quicker than caffeine anhydrous*, but no research has been conducted to

back up that claim. You can tell that Nutrex is a fan of this combination because it's also in *Warrior Pre Workout*, just at different dosages.

Caffeine Anhydrous (Yielding 150mg caffeine)

The most common form of caffeine in the sports supplement industry is none other than **caffeine anhydrous**. It's known for being *fast-acting, long-lasting, and incredibly effective at boosting performance*. Caffeine anhydrous is a synthetic form of caffeine, and the "anhydrous" means it's dehydrated. The combination of Kaff Citrate and caffeine anhydrous will definitely help you crush a workout, but as always – we *highly recommend starting with half a serving to assess your tolerance – 350mg of active caffeine is no joke and is not for everyone*.

- **Theacrine (as TeaCrine) – 50mg**

If 350mg of caffeine doesn't give you enough energy, then an extra 50mg of **TeaCrine** from *Compound Solutions* is here to make sure you're fired up for a big session!



TeaCrine, also known as *theacrine*, is usually added along with caffeine in pre workouts to further *enhance energy, mental focus, clarity, mood, and motivation*.^[29,30] What's even better is that TeaCrine *doesn't affect the cardiovascular system*,^[29] whereas excessive levels of caffeine intake can lead to *increased heart rate, blood pressure, and rapid breathing*. Getting a boost in energy from caffeine is good, but some serious side effects can occur if you really push the limits, which is what Nutrex is trying to avoid!

TeaCrine works synergistically with caffeine because it has a different mechanism of action – while caffeine inhibits *adenosine and phosphodiesterase* – TeaCrine modulates two neural pathways – *dopaminergic and adenosinergic*. [29,30]

Research shows that theacrine stimulates *dopamine receptors (D1 and D2)*, resulting in an increase in dopamine secretion. [29,30] *Dopamine* is a neurotransmitter that's responsible for feelings of pleasure, reward, and motivation. Other research suggests that TeaCrine *blocks A1 and A2 receptors* – further inhibiting *adenosinergic activity*, which decreases fatigue. [29,30]

Although 50mg is not a huge dose of TeaCrine , you're already getting 350mg of caffeine – so you should have plenty of energy.

- **BioPerine [(*Piper nigrum extract*)(fruit)] – 5mg**

This is not the last ingredient, but it's included to make sure you're getting the most out of Outlift Amped.



BioPerine is a high quality black pepper extract that's standardized to contain at least 95% of the main bioactive constituent – *piperine*. [31] It was created by *Sabinsa Corporation* and quickly gained popularity in the dietary supplement industry due to its ability to *enhance absorption* and *bioavailability* of several nutrients and ingredients. [31]

Preliminary research shows that piperine is capable of *increasing thermogenesis, altering efflux mechanisms and enzymes involved in metabolism*. [31] All three of these actions are attributed to BioPerine's absorption enhancing properties. [31] One of the most notable molecules that piperine effects is a protein that modulates intestinal uptake called *p-glycoprotein*. [31]

Thus, we are huge proponents of BioPerine because it can make your supplements that *much more effective!*

- **Rauwolfia (*Rauwolfia vomitoria*) extract (root) – 1.5mg**

To round out this *intense, high energy, and hard hitting* formula, we have a *strong* dose of **alpha-yohimbine**, also known as *rauwolfia vomitoria root extract!* If you've never tried alpha-yohimbine before, then we strongly recommend starting with half of a serving, because it's *powerful* and some people can tolerate better than others!



Alpha-Yohimbine is also included in Warrior Pre Workout.

Alpha-yohimbine is an alkaloid that's known for its *potent sympathetic nervous system stimulation* and this may be what puts the "amped" in Outlift Amped. It's most commonly found in advanced fat burners and pre workout formulas. This is definitely not a beginners' ingredient, which is why it fits well in the Warrior Series.

Fortunately, Nutrex is using alpha-yohimbine opposed to regular yohimbine because there's a major difference between the two, despite having similar names and molecular structures. Alpha-yohimbine provides all the same benefits as yohimbine – *enhanced energy, fat burning, improved mood, libido, and appetite suppression, without the negative side effects, such as anxiety, headaches, nervousness, and irritability.*[32-35]

Alpha-yohimbine's primary mechanism of action is the inhibition of *alpha-2 receptors* – resulting in *enhanced thermogenesis, lipolysis, and decreased fat storage.*[32,33] In other words, you have more energy to fuel your workouts and get rid of unwanted fat! Although Outlift Amped is not a fat burner, nearly everyone's goal is to build muscle and lose fat, so this may give you an extra boost.

Check Out This Video For An Overview Of Outlift Amped

SUBSCRIBE ON YouTube

Available Flavors

Nutrex is known for their *unique* and *delicious* flavors and with the launch of the Warrior Series – *they went all out*. Before the rebrand, Outlift Amped came in *Cosmic Blast* and *Fruit Candy*, but now it's also available in **Cola Soda**! It will be interesting to see how well they pull off the *classic soda flavor* in a pre workout because there are very few companies that have been able to do it!

In the “*other ingredients*” section of Outlift Amped's label it does say *sodium bicarbonate*, which may give it a more carbonated effect. Either way, we're confident that the flavors will be refreshing and delicious regardless of which one you go with!

Here's an updated list of all Outlift Amped flavor variations:



Crush Every Workout With Outlift Amped

OutLift Amped is not for the faint hearted – it's definitely geared towards the more *advanced* lifter and/or competitor. But if you're looking for something to take your training to the next level, this will definitely do it for you! Nutrex Research was able to take their original Outlift formula which is already stacked, and turn the dial up to *11* to give you even more energy!



The new Warrior Series offer high quality supplements for an extremely affordable price.

One thing we highly appreciate about Nutrex is that they make very solid products for and offer them at a fraction of the price. That just shows you they're not out here to make a ton of money by selling you underdosed products at a high cost. Nutrex has become a leader in this industry and started way back in 2001 – they're in it for the long haul and want nothing more than to provide the best supplements for their customers.

The Warrior Series was a major project for them to undertake, but so far, it's been getting amazing feedback. If you're on the market for a new pre workout and supplement brand, we highly recommend *Nutrex Research* – you'll definitely get the most bang for your buck with them. *Lastly, if you want to save even more money and know when new products and flavors release from Nutrex, subscribe down below!*

Nutrex Outlift Amped – Deals and Price Drop Alerts

Get Price Alerts

Get Outlift Amped Price Alerts
Get Nutrex alerts
Get Pre Workout Supplements price drops

Also get hot deal alerts

No spam, no scams.

Disclosure: PricePlow relies on pricing from stores with which we have a business relationship. We work hard to keep pricing current, but you may find a better offer.

Posts are sponsored in part by the retailers and/or brands listed on this page.

References

1. Pérez-Guisado J, Jakeman PM; "Citrulline malate enhances athletic anaerobic performance and relieves muscle soreness."; *J Strength Cond Res.* 2010;24(5):1215-1222. doi:10.1519/JSC.0b013e3181cb28e0; <https://pubmed.ncbi.nlm.nih.gov/20386132/>
2. Glenn JM. et al; "Acute citrulline malate supplementation improves upper- and lower-body submaximal weightlifting exercise performance in resistance-trained females."; *Eur J Nutr.* 2017;56(2):775-784. doi:10.1007/s00394-015-1124-6;

<https://pubmed.ncbi.nlm.nih.gov/26658899/>

3. Agarwal, U., Didelija, I. C., Yuan, Y., Wang, X., & Marini, J. C; "Supplemental Citrulline Is More Efficient Than Arginine in Increasing Systemic Arginine Availability in Mice"; *The Journal of Nutrition*, 147(4), 596–602; 2017; <https://academic.oup.com/jn/article/147/4/596/4584706>
4. Schwedhelm E, Maas R, Freese R, et al.; "Pharmacokinetic and pharmacodynamic properties of oral L-citrulline and L-arginine: impact on nitric oxide metabolism"; *Br J Clin Pharmacol*. 2008;65(1):51–59. doi:10.1111/j.1365-2125.2007.02990.x; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2291275/>
5. Natural Alternatives International; "CarnoSyn Beta-alanine Ingredient Information."; 2020; <https://carnosyn.com/carnosyn/>
6. Trexler, E.T., Smith-Ryan, A.E., Stout, J.R. et al.; "International society of sports nutrition position stand: Beta-Alanine."; *J Int Soc Sports Nutr* 12, 30 (2015); <https://jissn.biomedcentral.com/articles/10.1186/s12970-015-0090-y>
7. Olthof, M. R., & Verhoef, P. "Effects of betaine intake on plasma homocysteine concentrations and consequences for health"; *Current drug metabolism*, 2015; 6(1), 15-22; <https://pubmed.ncbi.nlm.nih.gov/15720203>
8. Cholewa JM, Hudson A, Cicholski T, et al. "The effects of chronic betaine supplementation on body composition and performance in collegiate females: a double-blind, randomized, placebo controlled trial"; *J Int Soc Sports Nutr*. 2018;15(1):37; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6069865/>
9. Cholewa, JM et al; "Effects of betaine on body composition, performance, and homocysteine thiolactone"; *Journal of the International Society of Sports Nutrition*; 2013; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3844502/>
10. Boel De Paepe; "OSMOLYTES AS MEDIATORS OF THE MUSCLE TISSUE'S RESPONSES TO INFLAMMATION: EMERGING REGULATORS OF MYOSITIS WITH THERAPEUTIC POTENTIAL."; *EMJ Rheumatol*. 2017;4[1]:83-89; <https://www.emjreviews.com/rheumatology/article/osmolytes-as-mediators-of-the-muscle-tissue-s-responses-to-inflammation-emerging-regulators-of-myositis-with-therapeutic-potential/>
11. Rawson, Eric S, and Jeff S Volek; "Effects of Creatine Supplementation and Resistance Training on Muscle Strength and Weightlifting Performance."; *Journal of Strength and Conditioning Research*; U.S. National Library of Medicine; Nov. 2003; <https://pubmed.ncbi.nlm.nih.gov/14636102>
12. Law, Yu Li Lydia, et al; "Effects of Two and Five Days of Creatine Loading on Muscular Strength and Anaerobic Power in Trained Athletes." *Journal of Strength and Conditioning Research*; U.S. National Library of Medicine; May 2009; <https://pubmed.ncbi.nlm.nih.gov/19387386>
13. Anomasiri, Wilai, et al; "Low Dose Creatine Supplementation Enhances Sprint Phase of 400 Meters Swimming Performance."; *Journal of the Medical Association of Thailand = Chotmaihet Thangphaet*; U.S. National Library of Medicine; Sept. 2004; <https://pubmed.ncbi.nlm.nih.gov/16083193>
14. National Institutes of Health; *Magnesium Fact Sheet For Health Professionals, Office of Dietary Supplements*; 2020; <https://ods.od.nih.gov/factsheets/Magnesium-HealthProfessional/>
15. Hummer, E., Suprak, D.N., Buddhadev, H.H. et al. "Creatine electrolyte supplement improves anaerobic power and strength: a randomized double-blind control study." *J Int Soc Sports Nutr* 16, 24 (2019); <https://jissn.biomedcentral.com/articles/10.1186/s12970-019-0291-x>
16. Zhang Y, Xun P, Wang R, Mao L, He K; "Can Magnesium Enhance Exercise Performance?"; *Nutrients*. 2017;9(9):946; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5622706/>
17. Waldron, M., et al.; "The Effects of an Oral Taurine Dose and Supplementation Period on Endurance Exercise Performance in Humans: A Meta-Analysis."; *Sports Medicine*; 2018; <https://pubmed.ncbi.nlm.nih.gov/29546641>
18. Zhang, M. et al.; "Role of taurine supplementation to prevent exercise-induced oxidative stress in healthy young men."; *Amino Acids* (2004) 26: 203–207; doi: 10.1007/s00726-003-0002-3; <https://www.essentialnutrition.com.br/media/artigos/preaction/10.pdf>
19. Attipoe, S. et al; *Tyrosine for Mitigating Stress and Enhancing Performance in Healthy Adult Humans, a Rapid Evidence Assessment of the Literature*; *Military Medicine*; Volume 180, Issue 7, July 2015, Pages 754–765; <https://academic.oup.com/milmed/article/180/7/754/4160625#101253256>
20. Roberto, M.; "L-Tyrosine vs. N-Acetyl L-Tyrosine: A Tale of Two Tyrosines."; *PricePLOW Blog*; 2017; <https://blog.priceplow.com/nootropics/l-tyrosine>
21. National Institute of Health; *Choline: Fact Sheet For Health Professionals*; Office of Dietary Supplements; 2020; <https://ods.od.nih.gov/factsheets/Choline-HealthProfessional/>

22. Purves D, Augustine GJ, Fitzpatrick D, et al.; "Neuroscience;" 2nd edition. Sunderland (MA): Sinauer Associates; 2001. Acetylcholine. <https://www.ncbi.nlm.nih.gov/books/NBK11143/>
23. Hasselmo ME; "The role of acetylcholine in learning and memory;" *Curr Opin Neurobiol.* 2006;16(6):710–715; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2659740/>
24. Jones BE; "From waking to sleeping: neuronal and chemical substrates". *Trends Pharmacol. Sci.*; 2005; 26 (11): 578–86; <https://pubmed.ncbi.nlm.nih.gov/16183137>
25. Lee JE et al; "Are dietary choline and betaine intakes determinants of total homocysteine concentration?;" *Am J Clin Nutr*; 2010 May; 91(5):1303-10; <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2854904/>
26. Penry, JT and Manroe, MM; "Choline: An Important Micronutrient for Maximal Endurance-Exercise Performance?"; 2008; 18(2), pp 191-203; <https://journals.humankinetics.com/view/journals/ijsnem/18/2/article-p191.xml>
27. Goldstein, E.R., Ziegenfuss, T., Kalman, D. et al. "International society of sports nutrition position stand: caffeine and performance"; *J Int Soc Sports Nutr* 7, 5 (2010); <https://link.springer.com/article/10.1186/1550-2783-7-5>
28. Patricia, JJ; "Caffeine Citrate Therapy for Apnea of Prematurity;" *Neonatal Network*; 2011; <https://connect.springerpub.com/content/sgrnn/30/6/408>
29. Compound Solutions; "TeaCrine Ingredient Information"; 2020; <https://compoundsolutions.com/ingredients/teacrine/>
30. Bello, M.L., Walker, A.J., McFadden, B.A. et al. "The effects of TeaCrine and caffeine on endurance and cognitive performance during a simulated match in high-level soccer players"; *J Int Soc Sports Nutr* 16, 20 (2019). <https://jissn.biomedcentral.com/articles/10.1186/s12970-019-0287-6>
31. Sabinsa Corp; BioPerine Ingredient Information; 2020; <https://www.bioperine.com/index.php/aboutbioperine>
32. Perry BD, U'Prichard DC. "(3H)rauwolscine (alpha-yohimbine): a specific antagonist radioligand for brain alpha 2-adrenergic receptors"; *Eur J Pharmacol.*; 1981; <https://pubmed.ncbi.nlm.nih.gov/6276200>
33. Garenc C, Pérusse L, Chagnon YC, et al. "The alpha 2-adrenergic receptor gene and body fat content and distribution: the HERITAGE Family Study;" *Molecular Medicine.* 2002;8(2):88-94. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2039973/>
34. Arthur JM, Casañas SJ, Raymond JR. "Partial agonist properties of rauwolscine and yohimbine for the inhibition of adenylyl cyclase by recombinant human 5-HT1A receptors"; *Biochem Pharmacol.*; 1993; <https://pubmed.ncbi.nlm.nih.gov/8517875>
35. Wainscott DB, et al; "[3HRauwolscine: an antagonist radioligand for the cloned human 5-hydroxytryptamine2b (5-HT2B) receptor"; *Naunyn-Schmiedeberg's Archives of Pharmacology* 357 (1): 17–24; 1998; <https://pubmed.ncbi.nlm.nih.gov/9459568>