

The ordinary man can achieve greatness if he's willing to fuse skillful measures with extraordinary effort.

Granite Supplements provides cutting edge, healthful nutritional tools to complement your bodybuilding **strategic plan**. Whether you're generally **restricting carbohydrate** (e.g., keto-dieting) or simply prefer a lighter, **carb-free intra-workout recovery drink**, we've created **Keto Factor X™**, a low-carb, ketone-enriched version of Recovery Factor X™.

When It's Time to **GRIND**.... **Keto Factor X™!**

We've included some of the recovery and performance perks of Recovery Factor X™ [electrolytes, essential amino acids (EAAs)] in Keto Factor X™, as well as the pump enhancing ingredients, to ensure **hydration** and **anabolism / anti-catabolism**, but replaced carbohydrate with **β-hydroxybutyrate**, so you now have the flexibility to:

- **Build upon an entry-level dose** of ketone bodies (as [goBHB™](#) β-hydroxybutyrate salts) by supplementing with **additional** ketone bodies and/or medium chain triglycerides¹.
- **Focus your nutrient timing** towards pre- and/or post-workout carbohydrate intake (e.g., eat more whole foods).

Keto Factor X™ is a powerful nutritional **performance** and **recovery** tool. In addition to the major electrolytes lost in sweat² [to help keep you well hydrated^{3,4}], we've included a synergistic combination of three supplement matrices:

- **Ketogenic** and **Neurogenic** Fuel Matrix
- **Essential Amino Acid** Myotropic Matrix
- Vasoactive **Pump** Matrix

Keto Force™ Synergy



Essential Amino Acid Myotropic Matrix

- We included the **Essential Amino Acid (EAA) Myotropic Matrix** because it's the **essential** [not the non-essential⁵] **amino acids** that trigger muscle protein synthesis⁶⁻⁸. Leucine (3g) sits atop this EAA stack because of its primacy in triggering protein anabolism⁹⁻¹¹. We were sure focus on the other branched chain aminos (BCAAs; Isoleucine and Valine at 1.5g each) as well, because the BCAAs are known to reduce muscle breakdown and post-exercise soreness and damage^{12,13}.
- The other EAAs blended in the Myotropic Matrix are based on the anabolic EAA mixture used extensively in research^{6,14-17}, adjusted slightly to take advantage of the anabolic signaling¹⁰ and insulin-releasing¹⁸ effects of lysine and phenylalanine.

Ketogenic and Neurogenic Fuel Blend

- Keto Factor X™ contains 4,600mg (4.6g) of (**goBHB™**) **β-hydroxybutyrate (BHB) salts**, a hearty **entry-level dose** of this ketone body. By building upon this with additional BHB salts, or ideally, a ketone ester supplement, blood ketone levels can be elevated dose-dependently¹⁹⁻²². [Unfortunately, the extremely viscous, oily and bitter²³ nature of available ketone mono**esters** would make a sticky, nasty mess out of the Keto Factor X™ powder.] Still, a low dose of BHB salts (~17g for a 220lb bodybuilder) can rapidly elevate blood BHB¹⁹ to levels normally seen only after 1-2 days of fasting²⁴, and the same dose of BHB esters can almost double peak BHB levels¹⁹. [**NOTE:** that amount of BHB **salt** would mean a large acid/salt load, but adding (caprylic and capric acid based) medium chain triglyceride can make BHB salts much more ketogenic^{1,25}.] While the data are very sparse²⁰, elevating blood ketones may serve as an alternate fuel to enhance endurance

- performance²³, suppress appetite²⁶, enhance cognition^{27,28} and possibly reap other metabolic benefits of ketosis^{22,29-31}.
- **N-Acetyl L-Tyrosine** is Keto Factor X™'s soluble source of L-tyrosine^{32,34}, a precursor for catecholamine synthesis (e.g., noradrenaline and dopamine)³⁵⁻³⁷, thus supporting brain neurotransmitter levels³⁸ and cognitive performance^{39,40}. When under duress (e.g., during a killer workout), tyrosine supplementation may actually promote the aggressive mentality⁴¹ needed to drive through previous performance barriers.

Vasoactive Pump Matrix

- **Keto Factor X™** contains 3g of **L-Citrulline**, which if consumed alongside **ArcReactor™** (our preworkout formula containing 6g of L-Citrulline) or some other 3-6g source L-Citrulline, provides an adequate dose^{42,43} to bolster nitric oxide synthesis [elevating both arginine⁴⁴ and nitrite⁴⁵!], open up blood vessels, drive more blood into muscle, improve exercise performance^{42,46,47}, and perhaps even reduce muscle soreness⁴⁶. L-Citrulline gives you a pump, performance enhancement and recovery potential⁴⁸, all in one!
- **Taurine** is a β-amino acid vital for a plethora of cellular processes^{49,50} including **maintaining cell volume**^{51,52}. Adequate taurine stores are necessary for optimal muscle force production⁵³⁻⁵⁵ and useful to prevent muscle cramps^{53,56}. Although endurance exercising rodents seem to get an ergogenic boost from taurine⁵⁷⁻⁶⁰, differences in taurine metabolism⁶¹ probably explain why this hasn't generally panned out in humans, at least during endurance events⁶²; Rutherford, 2010 #10715}. On the other hand, a 1-2 gram dose of taurine was **ergogenic** in an all-out 11 min effort⁶³ and increased fat burning during a 90 min bout⁶⁴. Still, taurine's a perfect fit in **Keto Factor X™**: Daily supplementation with taurine and BCAA (in our Mytropic Maxtrix) can speed recovery by reducing post-exercise muscle damage⁶⁵ and oxidative stress⁶⁶, **without** sacrificing the normal⁶⁷ adaptive free-radical quenching adaptations sent in motion by training⁶⁶.
- The **casein-derived tripeptides** in **VasoDrive-AP™** have been demonstrated to normalize blood pressure⁶⁸ by inhibiting angiotensin converting enzyme (ACE)^{69,70}. Inhibiting ACE and/or blocking the angiotensin II receptor also improves insulin sensitivity – vital for muscle blood flow and a good pump^{71,72} - and protects your muscle cells (and their mitochondria) against age and free-radical related dysfunction⁷³⁻⁷⁵. However, it's the potential **ergogenic effects** of lowering ACE activity⁷⁶⁻⁷⁹ that have prompted the suggestion ACE inhibitors be scrutinized as doping agents⁸⁰!
- **Capros®** is a concentrated extract from **Indian gooseberry** (a.k.a. amla) with powerful antioxidant properties^{81,82}. **Capros®** improves markers of cardiovascular risk (e.g. C-protein levels)⁸³ and blood vessel function^{81,84,85}, vital for a skin-splitting pump. [We've intentionally limited the dose of **Capros®** to ensure that it's anti-oxidant quenching power (**ORAC** value) is

roughly that of a few oranges⁸⁶, i.e., far less than what could endanger your gains^{67,87,88}.]

Disclaimer: L-Tyrosine may interact with certain drugs (such as MAOIs, Levodopa and thyroid medications).

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