



The Next Frontier in Sports Nutrition:

Botanical Blends for Muscular Health





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Plant-based ingredients are proliferating in the supplement market and resonating with consumers who want clean and close-to-the-earth nutritional support. As the consumer base for sports nutrition widens, quality ingredient suppliers are investing in the research and development of botanical ingredients, like sphaeranthus and mango tree bark for muscle health.

Fitness today is all about health

Alongside eating a balanced diet and clocking quality sleep, getting enough exercise is a critical component of a healthy lifestyle—and consumers are looking to supplements to help them achieve their fitness goals. According to *Nutrition Business Journal*, the sports nutrition market is humming along healthily, reaching a value of \$38.7 billion in 2019¹ and further proving what the industry has long suspected: that this category's appeal reaches beyond professional athletes to include 'weekend warriors' and general supplement consumers alike, whether their exercise routines take place in a gym, on a field, with a yoga mat, or on their neighborhood's sidewalks.

up to **4X** GREATER
IMPROVEMENT IN
Muscle Size[†]

up to **2X** GREATER
IMPROVEMENT IN
Muscle
Endurance[†]

up to **5X** GREATER
IMPROVEMENT IN
Lower Body[†]

up to **5.6X** GREATER
IMPROVEMENT IN
Upper Body[†]

[†] Results based on Ultra-Performance dose



Sphaeranthus indicus
(East Indian globe thistle)



Mangifera indica
(Mango bark)



PLT Health Solutions partner, Laila Nutra, screened over 2,000 botanicals for their ability to promote optimal strength, endurance, and muscle gains before landing on the combination of **sphaeranthus flower and **mango tree bark**.**

At the same time, today's sports nutrition consumers aren't solely focused on products produced with the animal-derived or synthetic-based ingredient of years past; nor are they interested in baseless claims or potentially harmful quick fixes. What they want instead is clean and holistic sports nutrition that's good for body and planet. The good news is that plant-based ingredients are poised to deliver. According to a recent study from The Good Food Institute, consumers place significant value on the perceived or intrinsic health and nutritional properties of plant-based offerings, which aligns nicely with the whole-body health goals of today's sports nutrition consumers. Moral and supply chain benefits like sustainability, the humane treatment of animals and environmental friendliness also positively correlated with purchase intent. Add to that, products labeled with words like "plant-based" and "plant-powered" resonated positively with consumers overall.²

In the supplement aisle, this translates to strong sales for herbs and botanicals, which grew 8.4% in 2019 and accounted for roughly 20% of the overall supplement market.³ When it comes to supplements, the verdict is in: consumers want holistic health benefits from close-to-nature sources, especially if those sources are plants.

Together, these trends usher in a new day for sports nutrition, where plants are powerful, every level of athlete is welcome, and supplements

are an important component of a healthy living and exercise plan. In response, manufacturers and brands must provide high-quality products that harness the power of plants for clear and measurable fitness results.

Holistic plant-powered muscle support

Muscle health is no longer the exclusive territory of the bodybuilding set. According to the National Institute of Arthritis and Musculoskeletal and Skin Diseases, healthy muscles not only play a vital role in supporting movement and strength over time, but they also help keep the joints in working order, which becomes more and more important as we age.⁴ As the word gets out and muscle health becomes mainstream, elite athletes and wellness aficionados alike demand clean and clinically tested ingredients that can support natural and healthy muscle growth.

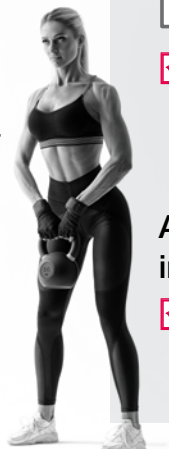




Recognizing the market need, PLT Health Solutions, with partner, Laila Nutra pursued botanically based solutions for muscle benefits. With intention, they sought specific solutions. Observing that two Ayurvedic herbs offered unique benefits, East Indian globe thistle (*Sphaeranthus indicus*) flower and mango tree (*Mangifera indica*) bark, could provide unique actions, research ensued to determine whether a standardized formulation could create a synergy. The flowering heads of sphaeranthus have been traditionally used for rejuvenation, physical performance, and longevity. The bark, leaves, and fruit of the mango tree have all been used for centuries, and contain important bioactive compounds, such as antioxidants. After extensive ethnopharmacological and laboratory testing, these two botanical extracts come together to deliver results in a new proprietary blend from PLT Health Solutions called RipFACTOR.

Science talks: Synergy in action, sphaeranthus flower and mango tree bark

In two randomized, double-blind, placebo-controlled clinical trials, the blend's effect on both trained and untrained male participants



Clinical studies:

Upper Body performance



Study 1:

At 4 weeks, compared to baseline, the RipFACTOR group

- ✓ Increased bench press repetition maximum (RM) from 42.90 kg to 66.40 kg

↑ **55% RM Increase**



Study 2:

At 4 weeks compared to baseline bench press in Ultra Performance dose group

- ✓ Increased bench press RM from 51.6 kg to 64.4 kg

↑ **24.8% RM Increase**

And

At 4 weeks compared to baseline bench press in Performance dose group

- ✓ Increased bench press RM from 52.12 kg to 64.04 kg

↑ **22.9% RM Increase**

Lower Body performance



Study 1:

At 4 weeks, compared to baseline, the RipFACTOR group

- ✓ Increased leg extension RM from 61.45 kg to 80.80 kg

↑ **31.5% RM Increase**



Study 2:

At 4 weeks compared to baseline in Ultra Performance dose group

- ✓ Increased leg extension RM from 68.6 kg to 83.2 kg

↑ **21.3% RM Increase**

And

At 4 weeks compared to baseline in Performance dose group

- ✓ Increased leg extension RM from 70.96 kg to 84.42 kg

↑ **19% RM Increase**



aged 18 through 40 was assessed.^{5,6} Subjects received one of two doses of RipFACTOR or placebo for 8 weeks, and in one study the placebo group also did double the exercise. Compared to placebo, those taking RipFACTOR experienced:

- 1 Significant increases in strength,** demonstrated by bench press, leg press, and grip strength. All measures increased steadily over the course of treatment.
- 2 Increases in muscle endurance and time to exhaustion,** both on a treadmill and on cable pull-down equipment.
- 3 Increases** that were greater not only than placebo but also greater than placebo + doubling the amount of exercise, even at the lower dose.
- 4 Increases** in arm muscle circumference.
- 5 Increased testosterone** and decreased cortisol

RipFACTOR produced significant results early in each study, and consistent improvements continued over the course of supplementation, fitting uniquely within trends for lifestyle changes rather than silver bullets. The clinical trials are currently in the submission process for publication in a sports medicine journal.

How?

RipFACTOR acts on the body in a variety of ways to help promote increased endurance,

strength and muscle growth. According to PLT Health Solutions, in preclinical tests, RipFACTOR was found to activate mTOR, which is the body's key regulator of skeletal muscle mass.⁷ The ingredient blend was also shown to enhance protein synthesis and muscle cell growth, while inhibiting protein degradation and muscle breakdown.⁸⁻¹⁰ RipFACTOR was also found to enhance nitric oxide generation in the body,^{11,12} a property thought to be related to mangiferin, an ingredient in mango bark,¹³ increasing blood flow and fueling muscle energy and endurance.

Quality is non-negotiable

Especially true in the sports nutrition sector, quality and safety need to be validated and communicated with confidence. Vestiges from the past, high-profile cases of product adulteration still plague consumer consciousness. Quality and traceability are paramount.

In an ingredient partner, manufacturers and brands should look for:



Safety

Responsible ingredient suppliers will invest in clinical testing to ensure that their products are safe for human consumption.



Value

Quality suppliers will provide customers with market intelligence, scientific support, quality assurance, sustainability benchmarks and ingredient traceability to deliver comprehensive solutions for today's challenges.

At PLT Health Solutions, for example, all ingredients are traceable, tested for chemical and physical makeup, and verified by third party sources for GMP, FDA, USP and other verifications.



Versatility

As the sports nutrition consumer base widens, flexibility is important. Manufacturers and brands would be wise to partner with ingredient suppliers who can offer

solutions that appeal to a variety of consumer preferences. RipFACTOR works well in a range of functional foods and is available in both a standard and a neutral tasting water-dispersible form, allowing formulators a broad range of products targeting bone, joint and muscle health in multiple application including:



References:

1. Sports Nutrition and Weight Management Report. *Informa*. 2020.
2. "How to Drive Plant-based Food Purchasing." *The Good Food Institute*. 2019.
3. Market Overview Issue. *Nutrition Business Journal*. 2020.
4. <https://www.niams.nih.gov/health-topics/kids/healthy-muscles>
5. Gora O, et al. Novel botanical composition, LI12542F6, improves muscle strength, mass, and endurance in resistance-trained healthy males: a randomized, double-blind, placebo-controlled trial. (Submitted for publication)
6. Nadig P, et al. The effects of a botanical blend supplement (LI12542F6) on muscle strength and endurance during resistance training: a randomized, double-blind, placebo-controlled trial. (Submitted for publication)
7. Loya R, Sinha S, Sengupta K.. Evaluating the effect of herbal extracts on different muscle markers in rat skeletal muscle cell. Laila Nutra Report No.:LN/CMBIWB/16-03-0090. . 2016. (unpublished)
8. Kumar KVN, Sinha S, Sengupta K. To estimate the modulation of in L6 Rat skeletal Myoblast cells proliferation by herbal products. Laila Nutra Report No.: LN/CMB/Proliferation/16-03-0063. 2016. (unpublished)
9. Varma Sagi R, Sinha S, Sengupta K. To estimate the modulation of total cellular protein in L6 Rat skeletal myoblast cells treated with herbal extracts. Laila Nutra Report No.: LN/CMB/Protein/16-03-0062. 2016. (unpublished)
10. Loya R, Sinha S, Sengupta K. Evaluating the myotube formation capacity of herbal extracts in C2C12 cell line. Laila Nutra Report No. LN/CMB/Myotube/17-03-0056_1. 2017. (unpublished)
11. Varma Sagi R, Sinha S, Sengupta K. To evaluate the modulation of nitrite production in human endothelial cells (EAhy926) by herbal products. Laila Nutra Report No.: LN/CMB/Nitrite/15-12-0870_1. 2015 (unpublished)
12. Kumar KVN, Sinha S, Sengupta K. Assessment of NADPH Oxidase (NOX) activity inhibition potential of herbal products. Laila Nutra Report No.: LN/CMB/NOX/16-03-0075. 2016 (unpublished)
13. Yang H et al. Mangiferin alleviates hypertension induced by hyperuricemia via increasing nitric oxide releases. *J Pharmacol Sci*. 2018 Jun;137(2):154-161.