



## Lean Balance

- Multidimensional Support for Optimal Blood Pressure Levels
- Helps Enhance Metabolic Activity and Efficiency
- Aids in Supporting Optimal Weight and Reducing Cravings
- Supports Healthy Cardiometabolic Function

Lean Balance is a high-concentration, highly purified polyphenolic blend that has been scientifically demonstrated to make positive shifts in functional metabolic targets. It provides multidimensional support to maintain blood pressure levels already within the normal range, manage weight, and increase satiety and appetite control. Lean Balance provides a potent formula for those seeking to optimize their metabolism and cardiovascular health.

### Overview

Maintaining healthy blood pressure levels has become a primary concern for many in the United States and across the globe. Blood pressure fluctuations cause a variety of cardiovascular challenges, and this is one of the most common cardiometabolic challenges experienced. In the Framingham study, the risk of having blood pressure challenges over a lifetime was 90%, while it is estimated that the global burden will increase to 1.56 billion by 2025.<sup>1</sup> While traditional therapies are available, most are not well-tolerated, making diet and lifestyle changes, such as whole food-based diets, increasing physical activity and targeted nutrient support, the optimal way to maintain blood pressure levels already within the normal range.<sup>2</sup> There is abundant evidence that dietary factors play a central role in determining cardiovascular risk driven by several potential mechanisms.<sup>3</sup> Among various factors determining human health, dietary patterns such as the Mediterranean diet or the DASH diet model have been demonstrated to play a role in helping maintain vascular health and preserving optimal blood pressure levels.<sup>4</sup> A common feature of such dietary patterns is the richness in plant-derived foods, which are high in fiber and phytochemicals proven to be antioxidant powerhouses. Polyphenols are a large group of plant metabolites that exert a variety of key biological activities including increasing satiety hormones (like GLP-1 [glucagonlike

peptide-1]) and decreasing hunger hormones (like ghrelin). In addition, targeted plant bioactives have also been shown to stimulate 5'adenosine monophosphate-activated protein kinase (AMPK), which has been shown to be a primary activating mechanism for human metabolism. AMPK may create such positive effects through its capability to modulate energy homeostasis, total daily energy expenditure, lipid oxidation and metabolism.<sup>5</sup> Lean Balance provides a targeted blend of key polyphenols that maintain energy and metabolic efficiency, maintain normal blood pressure levels, and support overall cardiometabolic function.

### Metabolaid® (Hibiscus and Lemon Verbena Extract)

Lemon verbena (*Lippia citriodora*) has been used as a food spice, cosmetic, and in traditional formulations in South America and Southern Europe. Hibiscus flower (*Hibiscus sabdariffa* L.) is used in traditional Chinese formulations in the manner of a tea to help maintain normal blood pressure levels and normal inflammatory balance. Metabolaid® is a combination of the plant polyphenols in lemon verbena and hibiscus flower extracts. These extracts have been shown to work synergistically on the activation of the energy sensor AMPK and promote optimal metabolic efficiency through the modulation of fat metabolism. In a 2018 double-blind, placebo-controlled and randomized trial in 56 subjects with weight management challenges, participants were given 500 mg of a combination of polyphenolic extracts from *Lippia citriodora* L. and *Hibiscus sabdariffa* L. for two months and showed significant improvement in body weight, abdominal circumference, and body fat percentage. Heart rate and systolic blood pressure also were maintained within the normal range.<sup>6</sup> In another eight-week, randomized, double-blind, placebo-controlled trial, 54 participants given the same extract showed an improvement of anthropometric

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

measurements, maintenance of blood pressure within the normal range, and improved heart rate. In addition, they experienced positive perception of overall health status. This polyphenolic combination has been shown to significantly increase metabolic function and support healthy weight by decreasing appetite biomarkers. This may help to avoid the undesired weight rebound typical of calorie restriction diets.<sup>5</sup>

### Green Coffee Bean Extract

Coffee is one of the most consumed drinks in the world. Green coffee beans are the beans from the Coffea fruit which have not yet been roasted. Coffee beans are naturally high in chlorogenic acid, and roasting them reduces the chlorogenic acid content.

Chlorogenic acid, a polyphenol, is what holds the antioxidant properties and increases the overall health benefits of coffee,<sup>7</sup> therefore, the effects and benefits of coffee are maximized in its natural and unroasted state. In addition, the green coffee bean extract in Lean Balance has had the caffeine removed, so the benefits of the polyphenols can be maximized. A meta-analysis of nine randomized controlled trials with green coffee bean extract (GCBE) administered for four weeks showed a benefit in maintaining blood pressure levels already in the normal range – both systolic and diastolic.<sup>8</sup> In another systemic review and meta-analysis study consisting of 637 participants, it was shown that green coffee bean extract consumption can help maintain optimal lipid markers, decrease body weight, and improve metabolism and glucose disposal.<sup>9</sup> Finally, in a randomized clinical trial, 43 subjects consumed GCBE for eight weeks. After supplementation, all indices of cardiovascular health showed benefits. Additionally, waist circumference and appetite score of the individuals supplemented with GCBE indicated a significant decline.<sup>10</sup>

### Magnesium Citrate

Magnesium is a cofactor in more than 300 enzyme systems that regulate diverse biochemical reactions in the body, including protein synthesis, muscle and nerve function, blood glucose control, and blood pressure regulation.<sup>11-13</sup> Magnesium is required for energy creation, which involves oxidative phosphorylation and glycolysis. It contributes to the development of bone and is required for the synthesis of DNA, RNA, and the antioxidant glutathione. Magnesium also plays a role in the active transport of calcium and potassium ions across cell membranes, a process that is important to nerve impulse conduction, muscle contraction, and normal heart rhythm.<sup>13</sup> The role of magnesium as an enzyme cofactor for activities that generate adenosine triphosphate (ATP) highlight its significance for maintaining energy levels and metabolic

efficiency. A meta-analysis of randomized, double-blind, placebocontrolled studies on the effects of magnesium supplementation on blood pressure showcased 34 trials involving 2,028 participants who, while using magnesium supplementation with a median duration of three months, showed benefits in maintaining systolic and diastolic blood pressure within the normal range for adults.<sup>14,15</sup> Overall oral magnesium citrate supplementation has been shown to maintain healthy blood pressure and blood sugar markers.<sup>15</sup>

### Directions

2 capsules per day or as recommended by your health care professional.

### Does Not Contain

Gluten, corn, yeast, artificial colors or flavors.

### Cautions

Do not consume this product if you are pregnant or nursing. Consult your physician for further information.

<b>Supplement Facts</b> <sup>V1</sup>		
Serving Size 2 Capsules		
Servings Per Container 30		
	Amount Per Serving	% Daily Value
Magnesium (as Magnesium Citrate USP)	50 mg	12%
Metabolic Blend (Metabolaid®)	500 mg	
Lemon Verbena Leaf Extract		*
Hibiscus Flower Extract		*
Green Coffee Bean Extract (Standardized to contain 112.5 mg Chlorogenic Acids)	250 mg	*

\* Daily Value not established.

Other Ingredients: Hypromellose (Natural Vegetable Capsules), Microcrystalline Cellulose, Magnesium Stearate and Silicon Dioxide.

† These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure, or prevent any disease.

## References

1. Kearney, P. M., Whelton, M., Reynolds, K., Muntner, P., Whelton, P. K., & He, J. (2005). Global burden of hypertension: analysis of worldwide data. *The Lancet*, 365(9455), 217–223. [https://doi.org/10.1016/s0140-6736\(05\)17741-1](https://doi.org/10.1016/s0140-6736(05)17741-1)
2. SUZUKI, A., KAGAWA, D., OCHIAI, R., TOKIMITSU, I., & SAITO, I. (2002). Green Coffee Bean Extract and Its Metabolites Have a Hypotensive Effect in Spontaneously Hypertensive Rats. *Hypertension Research*, 25(1), 99–107. <https://doi.org/10.1291/hypres.25.99>
3. Murray, C. J. L., Aravkin, A. Y., Zheng, P., Abbafati, C., Abbas, K. M., Abbasi-Kangevari, M., Abd-Allah, F., Abdelalim, A., Abdollahi, M., Abdollahpour, I., Abegaz, K. H., Abolhassani, H., Aboyans, V., Abreu, L. G., Abrigo, M. R. M., Abualhasan, A., Abu-Raddad, L. J., Abushouk, A. I., Adabi, M., & Adekanmbi, V. (2020). Global burden of 87 risk factors in 204 countries and territories, 1990–2019: a systematic analysis for the Global Burden of Disease Study 2019. *The Lancet*, 396(10258), 1223–1249. [https://doi.org/10.1016/s0140-6736\(20\)30752-2](https://doi.org/10.1016/s0140-6736(20)30752-2)
4. Gibbs, J., Gaskin, E., Ji, C., Miller, M. A., & Cappuccio, F. P. (2020). The effect of plant-based dietary patterns on blood pressure. *Journal of Hypertension*, Publish Ahead of Print. <https://doi.org/10.1097/hjh.0000000000002604>
5. Boix-Castejón, M., Herranz-López, M., Pérez Gago, A., Olivares-Vicente, M., Caturla, N., Roche, E., & Micol, V. (2018). Hibiscus and lemon verbena polyphenols modulate appetite-related biomarkers in overweight subjects: a randomized controlled trial. *Food & Function*, 9(6), 3173–3184. <https://doi.org/10.1039/c8fo00367j>
6. Herranz-López, M., Olivares-Vicente, M., Boix-Castejón, M., Caturla, N., Roche, E., & Micol, V. (2019). Differential effects of a combination of Hibiscus sabdariffa and Lippia citriodora polyphenols in overweight/obese subjects: A randomized controlled trial. *Scientific Reports*, 9(1). <https://doi.org/10.1038/s41598-019-39159-5>
7. Haidari, F., Samadi, M., Mohammadshahi, M., Jalali, M. T., & Engali, K. A. (2017). Energy restriction combined with green coffee bean extract affects serum adipocytokines and the body composition in obese women. *Asia Pacific Journal of Clinical Nutrition*, 26(6), 1048–1054. <https://doi.org/10.6133/apjcn.022017.03>
8. Han, B., Nazary-Vannani, A., Talaei, S., Clark, C. C. T., Rahmani, J., Rasekhamgham, R., & Kord-Varkaneh, H. (2019). The effect of green coffee extract supplementation on blood pressure: A systematic review and meta-analysis of randomized controlled trials. *Phytotherapy Research*, 33(11), 2918–2926. <https://doi.org/10.1002/ptr.6481>
9. Pourmasoumi, M., Hadi, A., Marx, W., Najafgholizadeh, A., Kaur, S., & Sahebkar, A. (2021). The Effect of Green Coffee Bean Extract on Cardiovascular Risk Factors: A Systematic Review and Meta-analysis. *Advances in Experimental Medicine and Biology*, 1328, 323–345. [https://doi.org/10.1007/978-3-030-73234-9\\_21](https://doi.org/10.1007/978-3-030-73234-9_21)
10. Roshan, H., Nikpayam, O., Sedaghat, M., & Sohrab, G. (2018). Effects of green coffee extract supplementation on anthropometric indices, glycaemic control, blood pressure, lipid profile, insulin resistance and appetite in patients with the metabolic syndrome: a randomised clinical trial. *British Journal of Nutrition*, 119(3), 250–258. <https://doi.org/10.1017/s0007114517003439>
11. Institute of Medicine (IOM). Food and Nutrition Board. Dietary Reference Intakes: Calcium, Phosphorus, Magnesium, Vitamin D and Fluorideexternal link disclaimer. Washington, DC: National Academy Press, 1997.
12. Rude RK. Magnesium. In: Coates PM, Betz JM, Blackman MR, Cragg GM, Levine M, Moss J, White JD, eds. *Encyclopedia of Dietary Supplements*. 2nd ed. New York, NY: Informa Healthcare; 2010:527-37.
13. Rude RK. Magnesium. In: Ross AC, Caballero B, Cousins RJ, Tucker KL, Ziegler TR, eds. *Modern Nutrition in Health and Disease*. 11th ed. Baltimore, Mass: Lippincott Williams & Wilkins; 2012:159-75.
14. Zhang, X., Li, Y., Del Gobbo, L. C., Rosanoff, A., Wang, J., Zhang, W., & Song, Y. (2016). Effects of Magnesium Supplementation on Blood Pressure. *Hypertension*, 68(2), 324–333. <https://doi.org/10.1161/hypertensionaha.116.07664>
15. Afitska, K., Clavel, J., Kisters, K., Vormann, J., & Werner, T. (2021). Magnesium citrate supplementation decreased blood pressure and HbA1c in normomagnesemic subjects with metabolic syndrome: a 12-week, placebo-controlled, double-blinded pilot trial. *Magnesium Research*, 34(3), 130–139. <https://doi.org/10.1684/mrh.2021.0489>