MyoStim™

*Supports Healthy Body Composition and Muscle Metabolism**

designs for health®

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MyoStim™ offers a complete suite of muscle-supportive nutrients formulated to promote muscle tissue preservation and healthy aging.* MyoStim™ combines 15 g of collagen peptides (as BODYBALANCE®), 3 g of L-leucine, 2 g of HMB (as MyHMB®), 2.5 g of creatine (as Creatine MagnaPower®), 150 mg of GG (as GG-Gold®), and 25 mcg (1,000 IU) of vitamin D3 per each 27 gram serving that all work synergistically to help mitigate the effects of age-related muscle loss and support lean body composition.* This formula is the most comprehensive and efficacious Designs for Health formula currently available that directly supports preservation of lean muscle tissue and anabolism.*

Formula Highlights

- Synergistic combination of ingredients
- Easy-to-mix powder that allows for flexible dosing and for individuals who have difficulty swallowing capsules and/or softgels
- Delicious orange flavor
- Naturally sweetened with stevia extract
- Includes BODYBALANCE® collagen peptides — a proprietary blend of bioactive hydrolyzed collagen peptides that support connective tissues, muscles, and bones*
- Includes MyHMB® — a powdered β-hydroxy β-methylbutyrate (HMB) to promote overall muscle health*
- Provides efficacious amounts of the branched-chain amino acid (BCAA) leucine that works with HMB to support muscle protein synthesis and to help reduce muscle breakdown*
- 25 mcg (1,000 IU) of vitamin D included to work alongside HMB to support overall bone health*
- Chelated form of creatine monohydrate bound to 200 mg of magnesium to help support cellular energy production and muscle health*

Benefits*

- Supports healthy aging
- May help attenuate age-related muscle loss/sarcopenia
- Promotes maintenance of muscle mass
- May help promote muscle growth
- Supports healthy body composition
- May help attenuate muscle protein breakdown in athletes
- Helps support lean body mass (muscle and bone) in individuals who are unable to perform regular resistance training

Supplement Facts

Serving Size 27 grams (approx. one scoop)
Servings Per Container 30

Amount Per Serving		% Daily Value
Calories	70	
Total Carbohydrate	4 g	1%**
Dietary Fiber	less than 1 g	2%**
Protein	14 g	0%**
Vitamin D (as Cholecalciferol)	25 mcg (1000 IU)	125%
Calcium	270 mg	21%
Magnesium (from Creatine MagnaPower®)	200 mg	48%
Sodium	50 mg	2%
Collagen Peptides (BODYBALANCE®)	15 g	*
L-Leucine	3 g	*
Magnesium Creatine Chelate (Creatine MagnaPower®)	2.5 g	*
Calcium β-Hydroxy-β-MethylButyrate Monohydrate (myHMB®)	2 g	*
Creatine (from Creatine MagnaPower®)	1.1 g	*
Trans-Geranylgeraniol (GG-Gold®)	150 mg	*

**Percent Daily Values are based on a 2,000 calorie diet.
*Daily Value not established.

Other Ingredients: Natural flavors (orange with other natural flavors), β-carotene (color), partially hydrolyzed guar gum, citric acid, steviol glycosides (Reb M).

Ingredient Highlights

Collagen peptides (as BODYBALANCE®) supports the maintenance of body collagen — the most abundant protein in the human body that represents 30% of total body protein — by directly stimulating the metabolism of target connective tissue cells involved in collagen biosynthesis.* Collagen provides the building blocks needed to maintain the structure and function of the muscle tissue itself and may be a more effective choice when the clinical goal is related to supporting the strength of bones, muscles, tendons, and cartilage, as well as the health and appearance of skin. Twelve-week supplementation of 15 g per day of these specialized bioactive collagen peptides (BCP) in combination with resistance training three times per week was shown in human clinical trials to significantly decrease fat mass, increase lean body mass (LBM), and provide more muscle strength compared to a placebo in both physically inactive men ages 30 to 60, in addition to elderly men with sarcopenia.[1,2] Additionally, in combination with resistance training, 15 grams per day of BCP supplementation for 12 weeks significantly improved body composition, increased LBM, and decreased fat mass in premenopausal women ages 18 to 50 years compared to a placebo.[3] Similar results were shown, such as increased fat free mass, muscle strength, and improved protein metabolism, in young athletes (ages 21 to 27) who performed full-body hypertrophy workouts 3 days per week combined with 15 g of BCP for 12 weeks.[4,5]

Leucine is an essential branched-chain amino acid that is considered to be the most anabolic amino acid. The International Society of Sports Nutrition recommends protein doses should contain between 700 to 3,000 mg of leucine content in exercising individuals for the effective stimulation of muscle protein synthesis.[6] Leucine has the capacity to directly stimulate protein biosynthesis and cell growth in skeletal muscle by potently activating the mammalian target of rapamycin (mTOR) signaling pathway.[7] As a substrate of protein synthesis, it also stimulates the effects of insulin and insulin-like growth factor 1 (IGF-1), which helps drive glucose into muscle and enhance fat metabolism.[8] A systematic review and meta-analysis of 16 studies demonstrated that leucine supplementation had beneficial effects on body weight, body mass index, and LBM in elderly adults prone to sarcopenia, but had no effect on muscle strength when compared to controls.[9]

β-hydroxy β-methylbutyrate (HMB) is naturally produced in the body during the metabolism of the BCAA leucine; albeit only 5% of dietary leucine is converted to HMB, which also declines naturally in aging. HMB simultaneously helps decrease muscle protein breakdown and increase muscle protein synthesis by activating the mTOR signaling pathway and disrupting proteolysis in muscle tissue, especially during exercise or when an individual is experiencing physiological stress.[10-12] According to the International Society of Sports Nutrition, HMB may help attenuate exercise-induced muscle damage and support exercise recovery in both trained and untrained individuals, particularly when HMB is taken close to their workout.[11,13] A stimulatory effect on increasing LBM and functionality in sedentary and elderly individuals was also demonstrated.[11] In combination with a structured exercise program, HMB supplementation may also help decrease fat mass.[11] A systematic review and meta-analysis found HMB to help increase skeletal muscle mass and improve muscle strength in populations with a variety of clinical conditions characterized by muscle loss and weakness.[14]

Vitamin D3 is included in this formula, as it was demonstrated in a National Institutes of Health-funded, randomized, double-blind, placebo-controlled trial to work synergistically with HMB.[15] Researchers found that the combination of vitamin D and HMB supplementation for 12 months improved muscle strength, functionality, and body composition in older adults with and without resistance training.[15] In non-exercising groups, participants taking HMB and vitamin D experienced more significant improvements in physical function and tended to have greater increases in strength than participants not taking HMB.[15]

Creatine monohydrate (as Creatine MagnaPower®) is involved in muscular contraction with more than 90% being stored in skeletal muscle; after age 30, phosphocreatine re-synthesis rates after exercise fall by 8% per decade. Creatinine monohydrate is considered to be the most effective and safe ergogenic supplement for increasing high-intensity exercise capacity and LBM during training, emerging it as a potential nutritional intervention capable of improving health in aging.[16] The beneficial effects of creatine on muscle function and lean mass in elderly individuals are consistent with and supported by meta-analytic data, whereas the actions of this nutrient on bone and brain metabolism remain promising, but also require further high-quality, clinical studies involving older individuals.[16-18] A meta-analysis showed that creatine supplementation significantly increased LBM and upper and lower body muscle strength during resistance training in older adults, suggesting creatine supplementation may help reduce the risk of age-related muscle loss in aging populations.[16,19]

The creatine in this formula is a chelated form that is bound to 200 mg of magnesium. Aging is often associated with magnesium insufficiency. Therefore, magnesium homeostasis is critical in healthy aging to help attenuate age-related muscle loss, especially in elderly populations.[20,21]

Geranylgeraniol (as GG-Gold®): Geranylgeraniol pyrophosphate (GGPP) is involved in muscle cell metabolism, differentiation, and protein synthesis.[22-24] GG production declines naturally during aging, particularly if coupled with the use of pharmaceutical agents that inhibit its synthesis, which can potentially contribute to undesirable loss of muscle mass. In vitro studies and animal studies have shown that GG increased the synthesis of cell mediators essential to muscle function and mitigated mitochondrial and muscle damage caused by statins.[22,24-28] In a mouse model, GG supplementation was able to mitigate muscle degeneration by reducing the expression of mediators involved in muscle atrophy.[29,30]

Warning: Pregnant or lactating women are advised against taking HMB, as safety studies have not been conducted for these populations.

Recommended Use: Mix 27 grams (approximately one scoop) in 8-10 ounces of water per day or as directed by your health-care practitioner.

For a list of references cited in this document, please visit:
http://www.designsforhealth.com/techsheet-references/myostim-references.pdf

BODYBALANCE® Always in Shape myHMB®

***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.**

To contact Designs for Health, please call us at (860) 623-6314, or visit us on the web at www.designsforhealth.com.