

PETFOOD FORUM

Where the GLOBAL PET FOOD
INDUSTRY does business

Enhancing Muscle Health and Longevity in Aging Canines with HMB Supplementation

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#petfoodforum

April 28-30, 2025, Kansas City, Missouri, USA

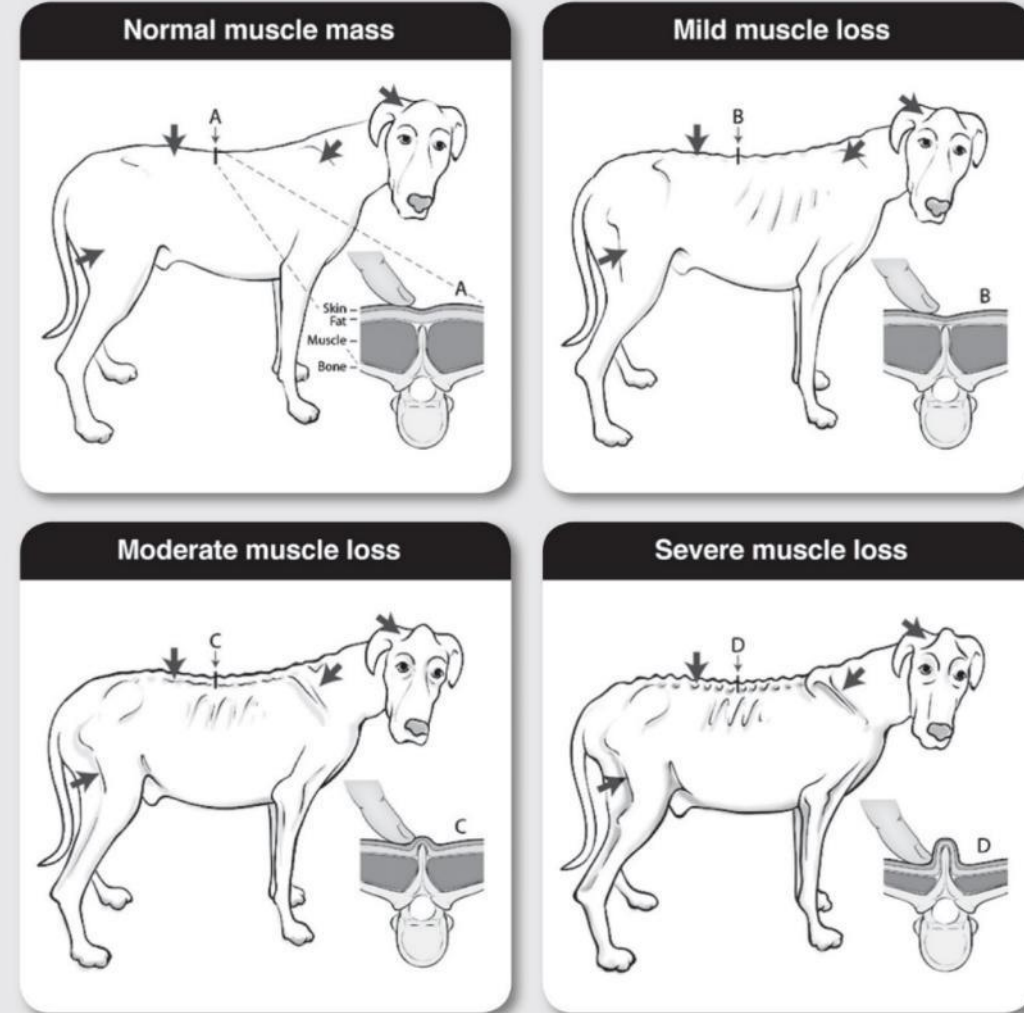


Just Like for People, Muscle Loss is A Major Health Problem Facing Our Companions

Muscle loss is inevitable with age for our pets.

In fact, **mobility and strength** are two of the most critical health concerns for all pet owners and *loss of muscle* is the primary cause of loss of strength, mobility and stability.

Age-related muscle loss is associated with increased morbidity and mortality in dogs.



Provided courtesy of the World Small Animal Veterinary Association (WSAVA). Available at the WSAVA Global Nutrition Committee Nutritional Toolkit website: <http://www.wsava.org/nutritiontoolkit>. Accessed June 29, 2016. Copyright Tufts University, 2014.

Pets Age Faster than Humans, so Proactive Care is Essential

Since our pets age more quickly than we do, it's important to ensure they receive the proper nutrition and exercise much earlier in life...

So what is the solution?



DOG YEARS	HUMAN YEARS (small to very large dogs)*
7	44 to 56
10	56 to 78
15	76 to 115
20	96 to 120

Age: Estimated Human Equivalents for Older Pets

*Small: 0-20 lbs; Medium: 21-50 lbs; Large: 51-90 lbs; Very large: >90 lbs

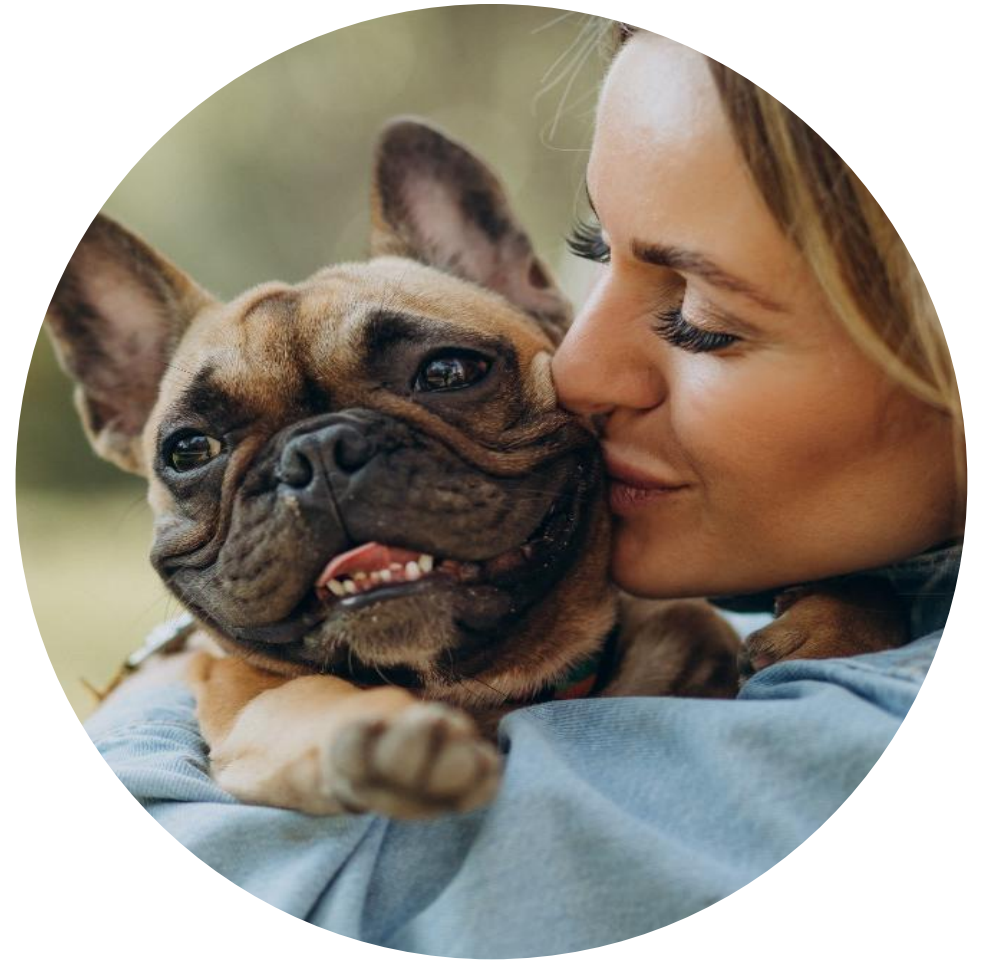


HMB is the PROVEN Solution for Addressing Age-Related Muscle Loss

Thankfully, what has been scientifically proven to help humans has also been proven to help our companion animals.

HMB has been used for over 3 decades to help people improve their quality of life by maintaining muscle health that is otherwise impacted negatively by the aging process.

Like people, maintaining muscle mass also improves pets' quality of life and can positively impact their lifespan by keeping them healthy and mobile in their later years.



**Keep your pet healthy and active.
Run. Thrive. Play.™**

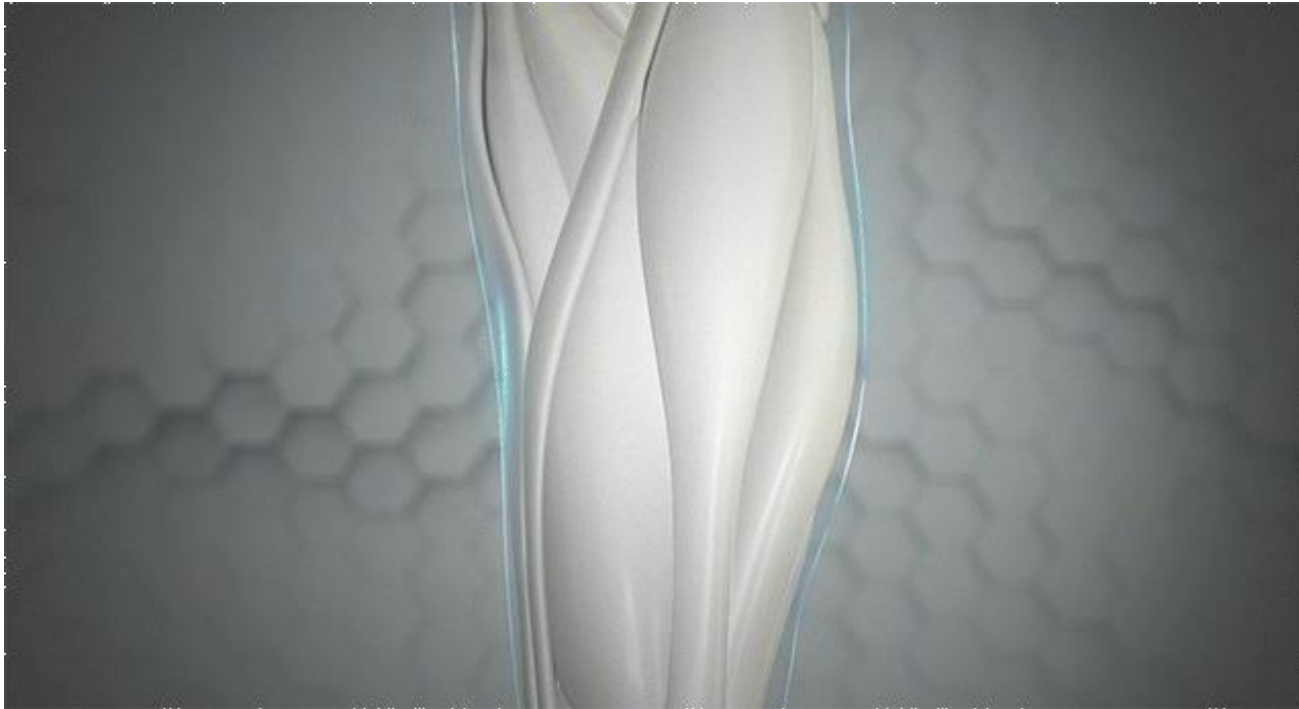
What is HMB?

HMB, or β -hydroxy β -methylbutyrate, is the active metabolite of leucine, a branched chain amino acid.

HMB is the *most effective* nutritional solution to increase, preserve and support healthy muscle function across multiple species!



How Does HMB Work?



Muscle mass is the sum of muscle protein breakdown and muscle protein synthesis.

HMB simultaneously decreases muscle protein breakdown and increases muscle protein synthesis.

The beauty of HMB is that it performs best when stressors are introduced to the body.

HMB Supplementation Benefits

HMB's benefits in humans which may be observed in canines:

Aging & Muscle Preservation

- Reduces muscle loss with age
- Maintains mobility and quality of life

Recovery & Rehabilitation

- Speeds up muscle recovery after injury, surgery, or illness
- Supports muscle function in bedridden and immobilized individuals

Athletic Performance & Strength

- Enhances strength, endurance, and exercise recovery
- Reduces muscle breakdown and soreness

From Humans to Companion Animals

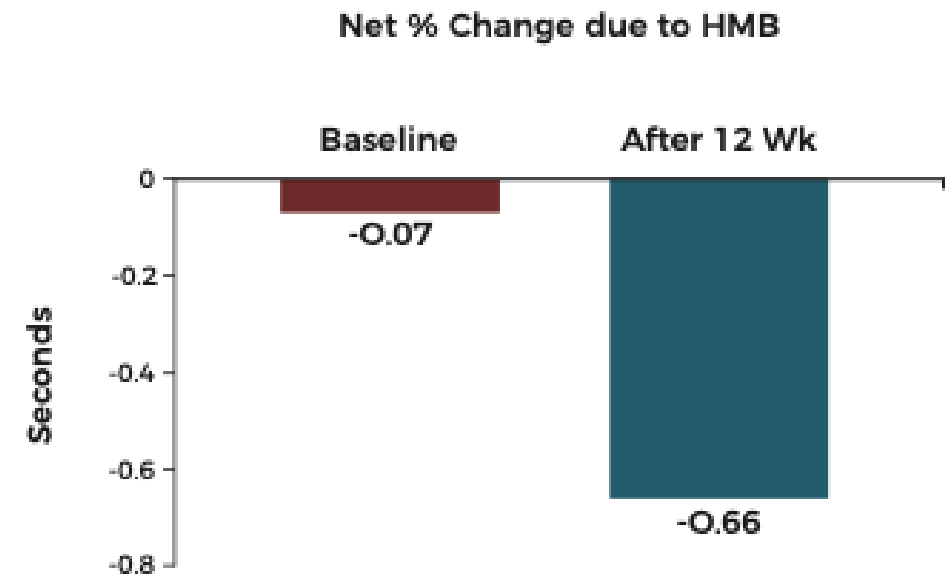
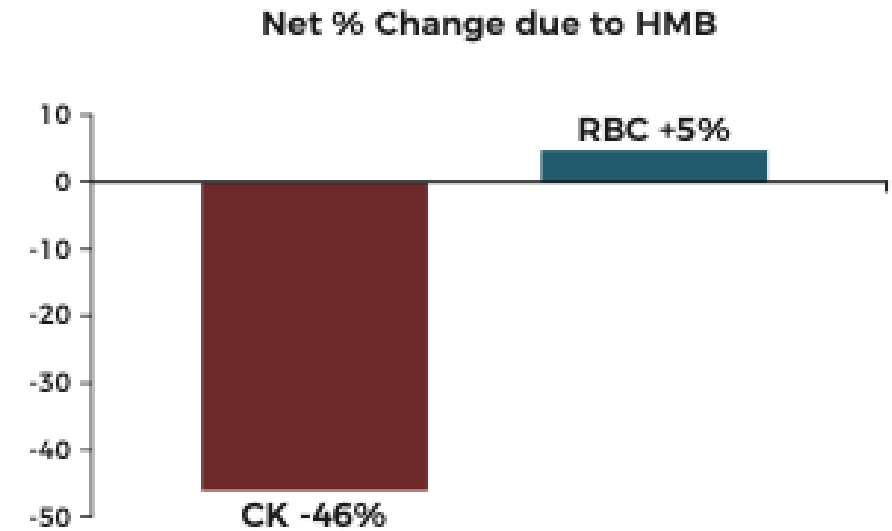
HMB's mechanisms of action are consistent across species

Proven muscle health benefits in humans lead us to explore its impact on performance as well as aging in companion animals

HMB Benefits in Canines

Performance Study 1

- Greyhounds (racing)
- 1-gram HMB/day or control
- 12 weeks
- HMB supplementation decreased creatine phosphokinase and increased red blood cells.
- HMB supplementation resulted in a decrease in race time.
- *To be published*

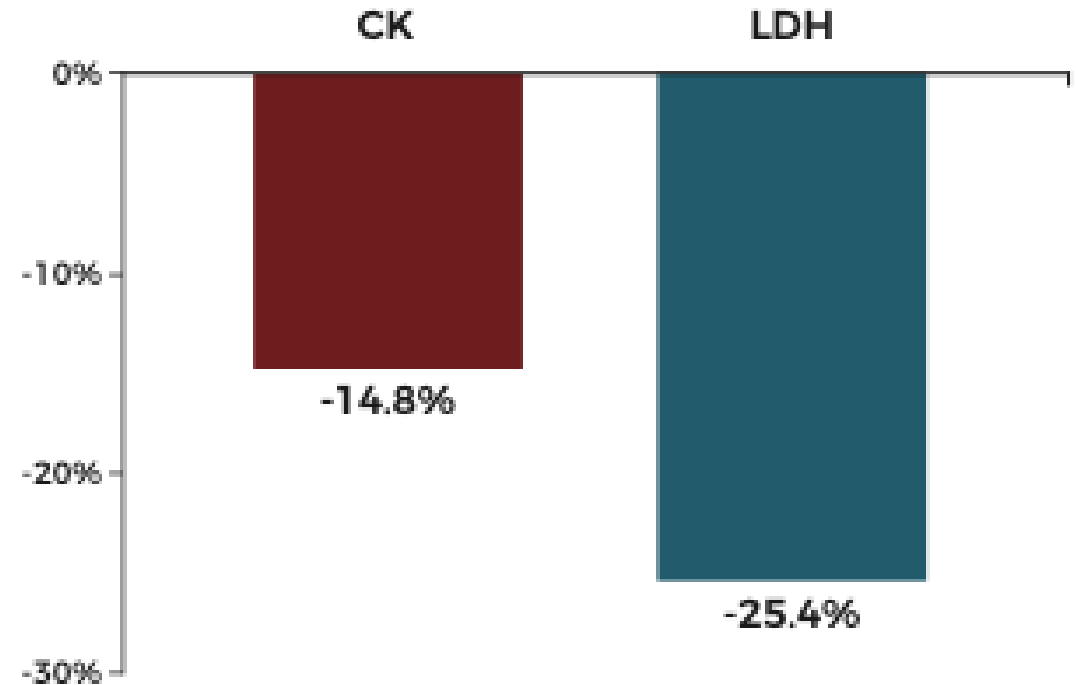


HMB Benefits in Canines

Performance Study 2

- Sled dog study (Iditarod)
- 1-gram HMB/day or control
- HMB supplementation at least 2 weeks prior to start and continuously during the race
- HMB supplementation reduced indicators of muscle damage - creatine phosphokinase (CK) and lactate dehydrogenase (LDH)
- *To be published*

Change in Post-Iditarod Enzyme Levels with HMB



NEW Study Shows How HMB and Vitamin D Supports Health and Activity Response

This study was an owner (in-home) canine study that shows HMB and Vitamin D supplementation improved the response to increased activity in older and obese animals while maintaining an excellent safety profile and establishing it as a scientifically proven solution for improving activity.



Study Design:
Placebo-controlled,
double-blinded



Subjects:
Older and obese
owner companion canines



Dosing:
38 mg of CaHMB per KG of
bodyweight w/ Vitamin D
or control diet



Duration:
Variable
(to 20% weight loss)

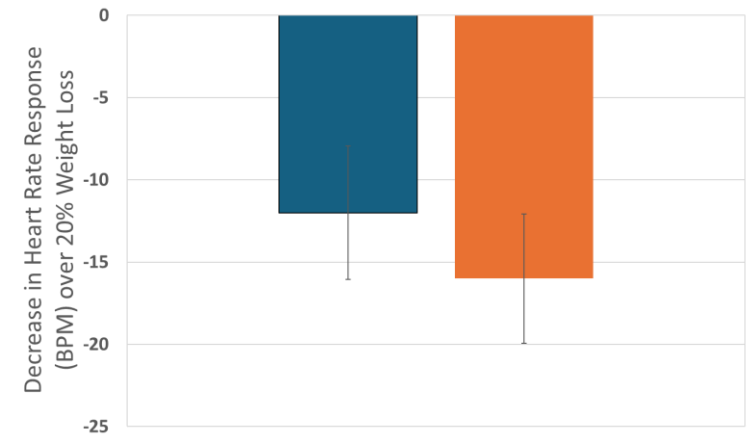
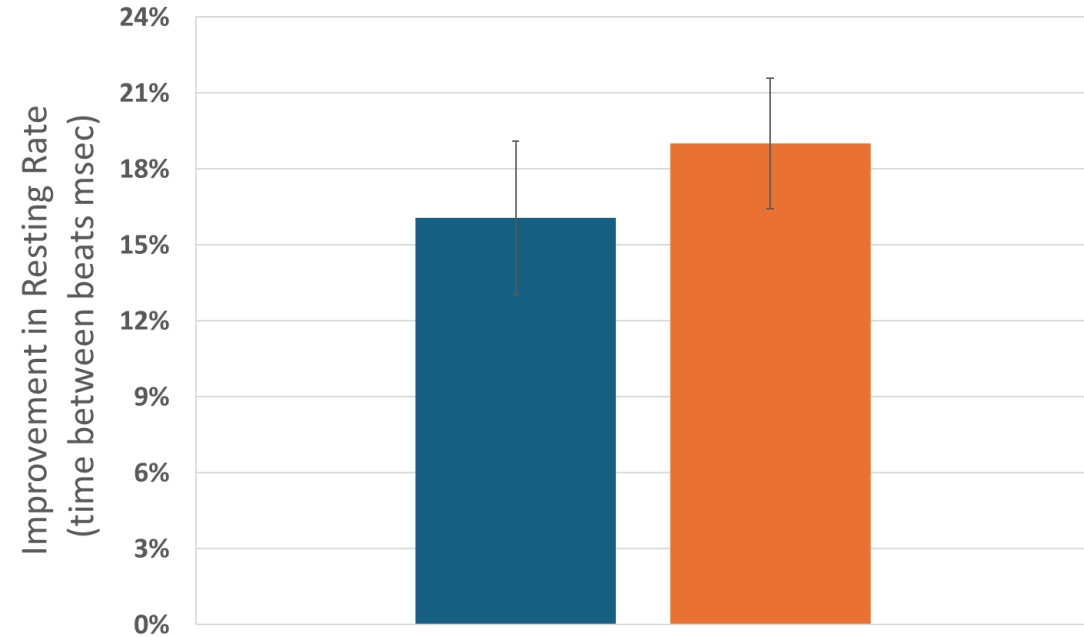


The Study Results

Improvement in "Resting Rate"
(time between beats)...
*decreased heart rate response
to activity*

Thus, activity perception will be
less stressful... more likely to
engage (voluntary activity – play)
which may improve quality of
life

To be published



NEW Study Shows How HMB Supports Muscle Health in Canines

This pilot study is the first to clinically demonstrate that HMB supports muscle health and activity levels in dogs while maintaining an excellent safety profile, establishing it as a scientifically proven solution for muscle preservation and healthy aging in companion animals.



Study Design:
Placebo-controlled,
double-blinded
crossover design



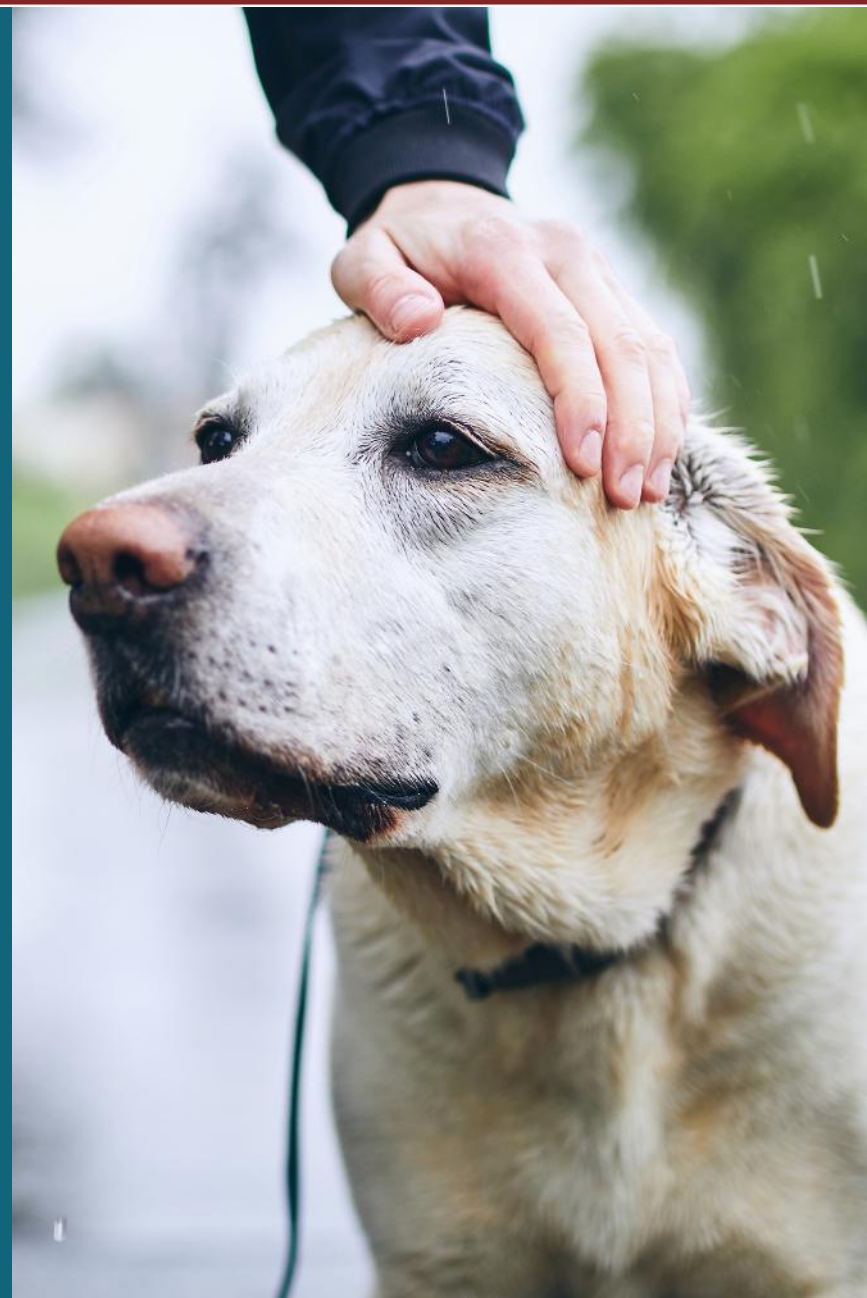
Subjects:
Duchenne muscular dystrophy
(DMD) Dogs*



Dosing:
3 grams of HMB
or placebo*



Duration:
28 days*

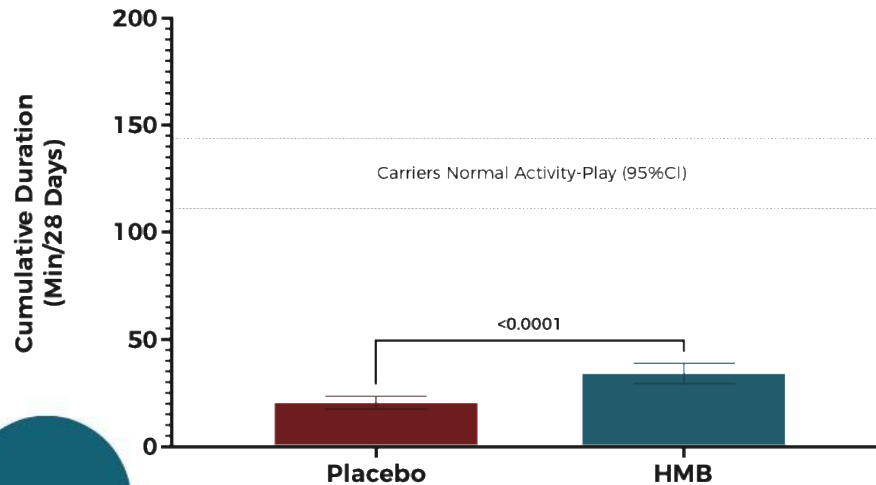


The Study Results

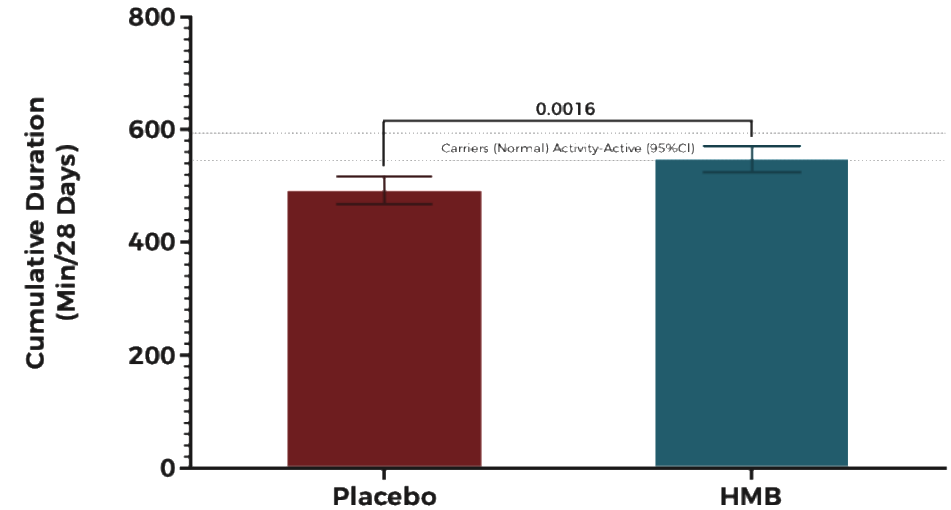
DMD dogs treated with HMB showed...

- ✓ A 40% increase in exertional capacity compared to those given a placebo
- ✓ A 10.5% increase in non-exertional (active) movement
- ✓ A 6% decrease in rest time was observed
- ✓ The plasma concentration of hydroxyproline (marker of collagen breakdown) was significantly higher in the placebo compared HMB group

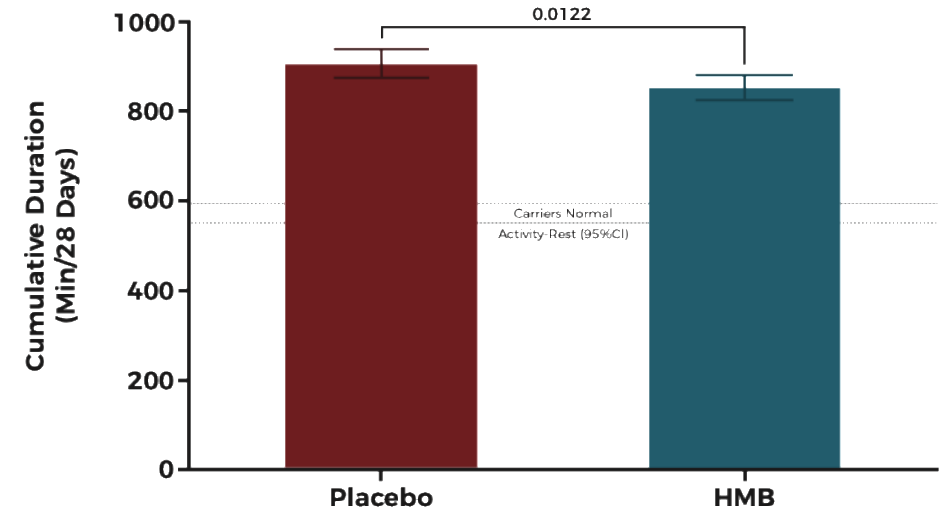
DMD Play (High Exertion) Activity Levels



DMD Active (Non-Exertional) Activity Levels



DMD Rest Activity Levels



What Does this Mean for the Pet Supplement Industry?

HMB is an essential ingredient in well-rounded healthy aging formulations for pets.

Activity level, mobility and quality of life may be improved with HMB supplementation!

HMB enables the development of combination products by complementing joint health ingredients further supporting enhanced mobility as well as overall quality of life.

Target Market:



Senior pets for the purpose of improving muscle health, mobility/activity, and overall quality of life



Pets with muscle-wasting conditions










Pets recovering from injury or surgery

The myHMB[®] Advantage



Rigorously Researched and Tested

-  Most clinically researched, TSI HMB used in 50+ human studies
-  Most rigorously tested efficacy, safety and toxicity
-  World class analytical testing, assay, impurities
-  Food sensory testing laboratory
-  FCC total supply chain
-  State of the art facilities, NSF certified & 3rd party audited, cGMP
-  FSMA, regulatory compliant

The Leading HMB Ingredient for Safety and Regulatory Compliance

-  NASC preferred supplier for HMB
-  Currently approved or pending regulatory approval in several key markets worldwide
-  Self Affirmed GRAS (Generally Recognized As Safe) in Humans



INGREDIENT



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