



## FACT SHEET HMB SUPPLEMENTATION

### WHAT IS HMB?

$\beta$ -Hydroxy  $\beta$ -methylbutyrate (HMB) is a metabolite of the essential branch chain amino acid leucine, claimed to decrease muscle protein breakdown associated with exercise, increasing muscle mass and strength development associated with resistance training. HMB is also claimed to reduce muscle damage/soreness, enhancing recovery. Much of the initial research on HMB focused on animals, assessing the effect on carcass mass and quality, immune function, morbidity and mortality, colostral milk fat content, growth rates, safety and toxicity. Despite unconvincing results in animal research, HMB supplementation was applied to humans in the mid 1990's under the presumption that it may enhance gains in muscle size and strength while reducing muscle damage and soreness associated with resistance training and possibly enhance aerobic capacity.

### WHY TAKE HMB?

Interest in the application of HMB to the sports environment emerged following the publication of research suggesting greater resistance training adaptations in response to HMB supplementation. Researchers reported that supplementation with either 1.5 or 3.0 g per day of HMB had a favourable impact on indirect indices of muscle protein breakdown and muscle damage, with concomitant trends for enhanced strength and skeletal muscle hypertrophy. Consequently, the popularity of HMB supplementation increased dramatically, becoming one of the top five or six supplements used by athletes in the late 1990's. Since that time, interest in HMB supplementation amongst athletes has probably declined. Despite this, research on HMB within the sports environment continues to emerge. When data is consolidated across studies, the benefits of HMB supplementation in response to resistance training tend to be trivial to small for untrained individuals and most likely non-existent in trained lifters.

This disparity in responsiveness to HMB supplementation relative to resistance training status might be expected given the suppression in skeletal muscle protein breakdown as a consequence of resistance training adaptations. Furthermore, if HMB does enhance net protein balance following resistance training as a

consequence of reducing protein degradation, any effect on adaptations is likely to be blunted compared to interventions that enhance protein synthesis as the protein synthetic response is many times more sensitive to nutrition interventions that degradation. An exception may be in clinical conditions such as cancer in which skeletal muscle atrophy results from an elevation in skeletal muscle protein breakdown. HMB supplementation is now being explored within this environment.

### HOW DO I TAKE HMB?

HMB has a relatively short half-life in the blood and as such is typically prescribed in divided doses of 1 gram, 3 times a day. As such, issues of compliance may need to be considered when contemplating HMB prescription. Doses of HMB in excess of 3 grams per day have been proven to be ineffective.

### ARE THERE ANY RISKS IN TAKING HMB?

Short term HMB supplementation appears to be safe, with daily doses equivalent to ~6 g per day ( $76 \text{ mg} \cdot \text{kg}^{-1}$ ) having no impact on indices of hepatic, renal or immune function. No studies on the safety of long term HMB supplementation have been undertaken although acute large doses appear to be free of side effects, as does an intake of 3 grams per day.

### SUMMARY

The potential for HMB supplementation to enhance strength training adaptations appears to be small in previously untrained individuals and negligible in resistance trained athletes. Given that the protein synthetic response is much more sensitive to nutrition interventions than protein breakdown, the resistance trained athlete is advised to focus on proven strategies such as post-exercise ingestion of high biological value proteins rich in leucine to maximize adaptation to the resistance training stimulus.

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