

The Effects of Beta-Hydroxy-Beta-Methylbutyrate Supplementation on Recovery Following Exercise-Induced Muscle Damage: A Systematic Review and Meta-Analysis.

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Abstract

BACKGROUND: Growing evidence suggests beta-hydroxy-beta-methylbutyrate's (HMB) positive effects on recovery following exercise-induced muscle damage (EIMD). However, findings vary substantially across studies.

OBJECTIVE: A meta-analysis of randomized controlled trials was conducted to assess the effects of HMB supplementation on recovery following EIMD by assessing indirect markers of muscle damage, namely creatine kinase (CK) and lactate dehydrogenase (LDH) serum levels among healthy participants.

METHOD: A comprehensive search was performed on electronic databases (Medline, Scopus, Cochrane Library, and Google Scholar) up to October 2017 for trials evaluating the effects of HMB on recovery following EIMD. Mean \pm standard deviation of follow-up CK and LDH concentrations were extracted to calculate the effect size for meta-analysis.

RESULTS: A total of 324 participants for CK and 229 participants for LDH were found from the 10 and 8 studies, respectively. The results revealed a significant effect of HMB supplementation on CK (weighted mean difference [WMD] = -60.71 UL^{-1} ; 95% confidence interval [CI], -78.12 to -43.29 ; $I^2 = 4.1\%$; $P_{\text{heterogeneity}} = 0.40$) and LDH reduction (WMD = -15.42 UL^{-1} ; 95% CI, -22.2 to -8.6 ; $I^2 = 0.0\%$; $P_{\text{heterogeneity}} = 0.53$). In addition, a subgroup analysis based on study duration (< 6 weeks vs. ≥ 6 weeks) suggested that HMB effectiveness on EIMD was statistically significant in studies over 6 weeks ($p < 0.001$).

CONCLUSIONS: The current evidence revealed a time-dependent effect of HMB in reducing LDH and CK serum levels among adults. HMB, therefore, may be seen as a priority muscle damage recovery agent in interventions.

KEYWORDS: Beta-hydroxy-beta-methylbutyrate; creatine kinase; exercise; lactate dehydrogenase; meta-analysis