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Effect of beta-hydroxy-beta-methylbutyrate supplementation on muscle loss in older adults: a systematic review and meta-analysis.

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Abstract

BACKGROUND: Beta-hydroxy-beta-methylbutyrate (HMB), a metabolite of the branched-chain amino acid leucine, has been investigated as a potential supplement to improve muscle quality; however, whether HMB supplementation has beneficial effects on muscle loss in older adults remains unclear.

DESIGN: Systematic review with meta-analysis.

SETTING: PubMed, Medline and EMBASE databases were searched from the earliest possible year to September 2014.

PARTICIPANTS: Individuals aged 65 years and older that reported absolute changes in body composition with use of HMB.

MEASUREMENTS: Two review authors working independently reviewed the trials, and standard mean difference was calculated using a fixed effects model.

RESULTS: A total of seven randomized controlled trials were included, in which 147 older adults received HMB intervention and 140 were assigned to control groups. The meta-analysis showed greater muscle mass gain in the intervention groups compared with the control groups (standard mean difference=0.352kg; 95% confidence interval: 0.11, 0.594; Z value=2.85; P=0.004). There were no significant fat mass changes between intervention and control groups (standard mean difference=-0.08kg; 95% confidence interval: -0.32, 0.159; Z value=0.66; P=0.511).

CONCLUSION: Beta-hydroxy-beta-methylbutyrate supplementation contributed to preservation of muscle mass in older adults. HMB supplementation may be useful in the prevention of muscle atrophy induced by bed rest or other factors. Further studies are needed to determine the precise effects of HMB on muscle strength and physical function in older adults.

KEYWORDS: Beta-hydroxy-beta-methylbutyrate; HMB; Meta-analysis; Muscle mass; Sarcopenia

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