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β -Hydroxy- β -Methylbutyrate (HMB) Supplementation of Resistance Trained Men

**A thesis presented in partial fulfilment of
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Abstract

A randomised double-blind placebo controlled study design was used to investigate the effects of supplementing 34 resistance trained men (RTM) with 3g/d of β -hydroxy- β -methylbutyrate or a cornstarch placebo on strength and body composition over a 9 week supplementation period.

At the beginning of the study period, questionnaires were given to each participant. Prior to and following the period of supplementation; anthropometric measurements were taken, including 8 skinfold sites, height, and body weight; body composition was measured using bioelectrical impedance analysis; strength was assessed using 1 repetition maximum (1RM) strength testing on the leg extension, bench press, and preacher curl apparatus; and food intakes were assessed using 3-day dietary records. During the supplementation period, all participants completed the same resistance training programme and physical activity was assessed using training log book records.

Prior to the supplementation period, a significant difference was found between the two supplementation groups for initial body mass indices (BMI: HMB 26.2 ± 0.8 ; Placebo 22.8 ± 0.9 , $P=0.014$). There was no significant difference found between the HMB and Placebo supplemented groups for any other baseline anthropometric ($P>0.056$), or strength measurements ($P>0.583$).

Over the study duration there was no significant difference found in number of training sessions between the two supplemented groups ($P>0.056$). Following the supplementation period there was no significant change in anthropometric measurements ($P>0.095$), nor actual strength ($P>0.086$) over the study duration. However, percent change in leg

extension strength increased significantly more for the HMB-supplemented group than the placebo group (LE: HMB $14.7 \pm 3.6\%$; Placebo $4.84 \pm 2.8\%$, $P=0.041$).

During the supplementation period there was a significant difference found between the dietary intakes of some nutrients between the supplementation groups. The HMB group tended to consume a greater percent of energy from carbohydrates, and had a higher maltose intake. The HMB group had a lower percent of energy from fats in the diet, and consumed lower average cholesterol intake than the placebo group ($P<0.047$). Several study participants failed to meet the recommended dietary intakes for adult New Zealanders of certain nutrients. The average intakes of energy from carbohydrates, intakes of vitamin A, vitamin E, vitamin B6, potassium, magnesium, calcium, and selenium were low for some participants.

The conclusion of this study was that there was no beneficial effect of HMB supplementation on body composition in resistance trained humans, however there was a significant increase found in leg extension strength with HMB supplementation in response to resistance exercise over the 9 week supplementation period.

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