Short report

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Proteomic analysis of plasma after branched chain enriched mixture supplementation in mice

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Abstract

Background

Branched chain amino acid (BCAA) supplementation is a recently identified strategy to promote longevity in mice. A proteomic approach was used to identify proteins which are differentially expressed in the sera of mice following supplementation with selected branched chain amino acid enriched mixture (BCAAem).

Findings

12 male mice (C57Bl6, 9 months-old) were randomly assigned to unsupplemented (Control, n = 6) and supplemented (BCAA, n = 6, 0.1 mg/gr/day in drink water for 4 weeks). At the end of treatment total plasma samples from Control and BCAAem mice were separated by two-dimensional gel electrophoresis (2-DE). After staining, the gels were imaged and differential protein expression patterns were interrogated using image analysis software. Spots showing a different expression level were identified through a comparison with 2D maps found in databases officially

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recognized (ExPASy).

Master gels of Control and BCAA mice exhibited slightly different 2-DE patterns as only 10 spots out of 500 appeared differentially expressed: 8 were upregulated (corresponding to Apolipoprotein A-I (APOA1), Complement factor B, Complement C3, Immunoglobulin light chain) and 2 appeared downregulated (Alpha-1-antitrypsin and unknown).

Conclusions

Supplementation with BCAAem in mice results in a slight perturbation of the host serum proteome. Of particular interest is the increased Apolipoprotein A-I (APOAI) following treatment.

Keywords: Amino acids; Proteome; Dietary supplements