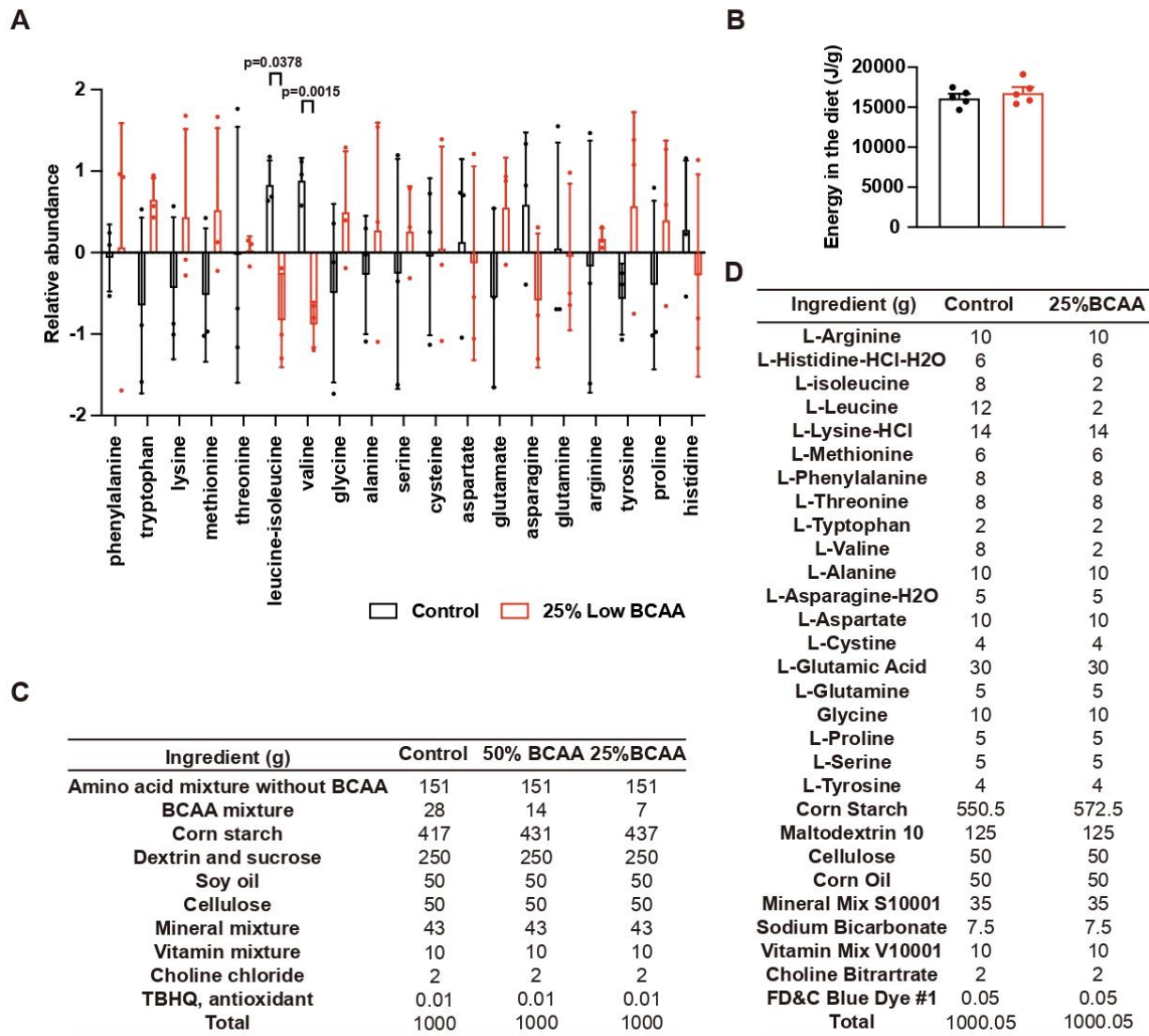


Appendix Figures

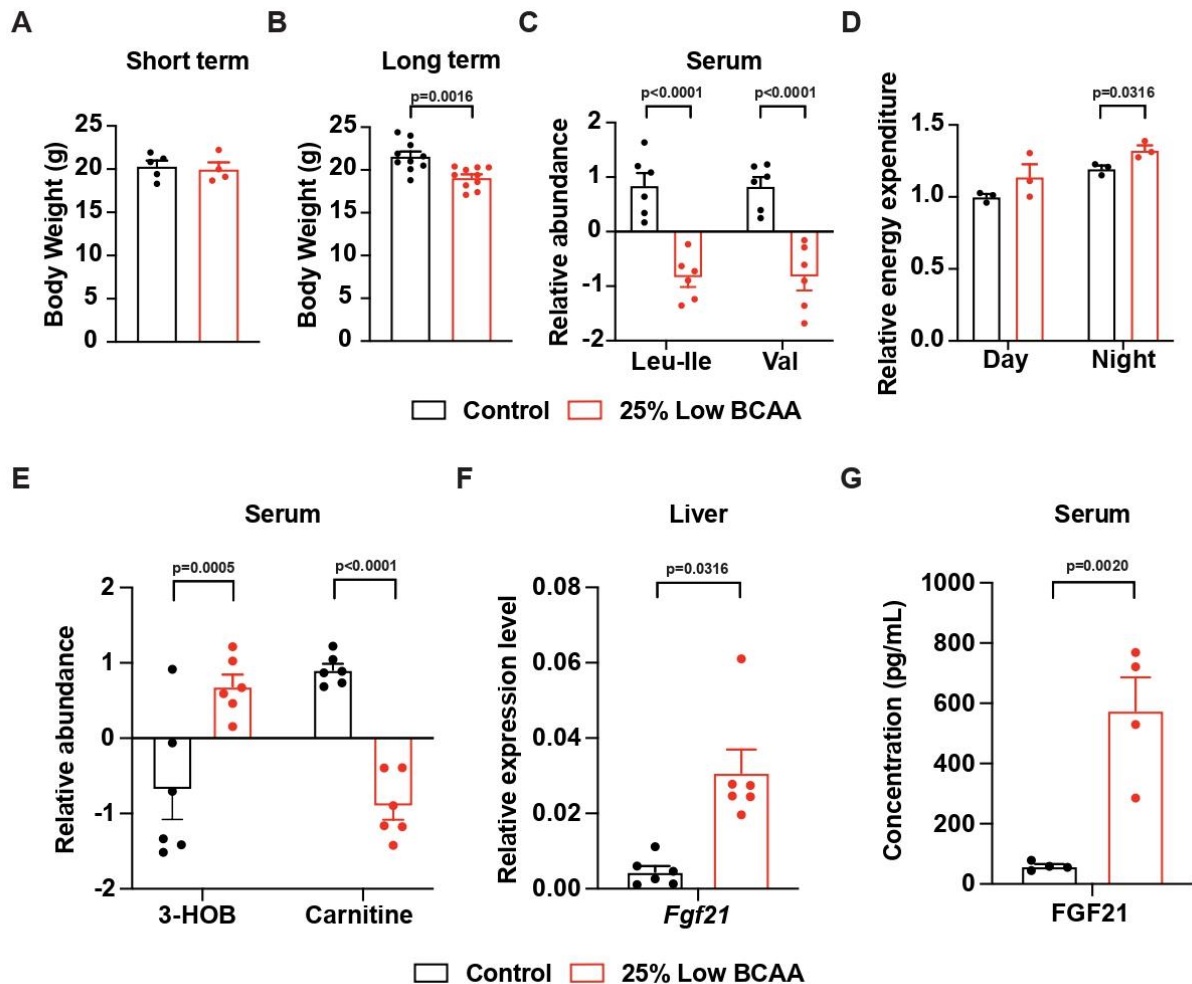
Appendix FigureS1	2
Appendix FigureS2	3
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Appendix FigureS5	5

Appendix Figure



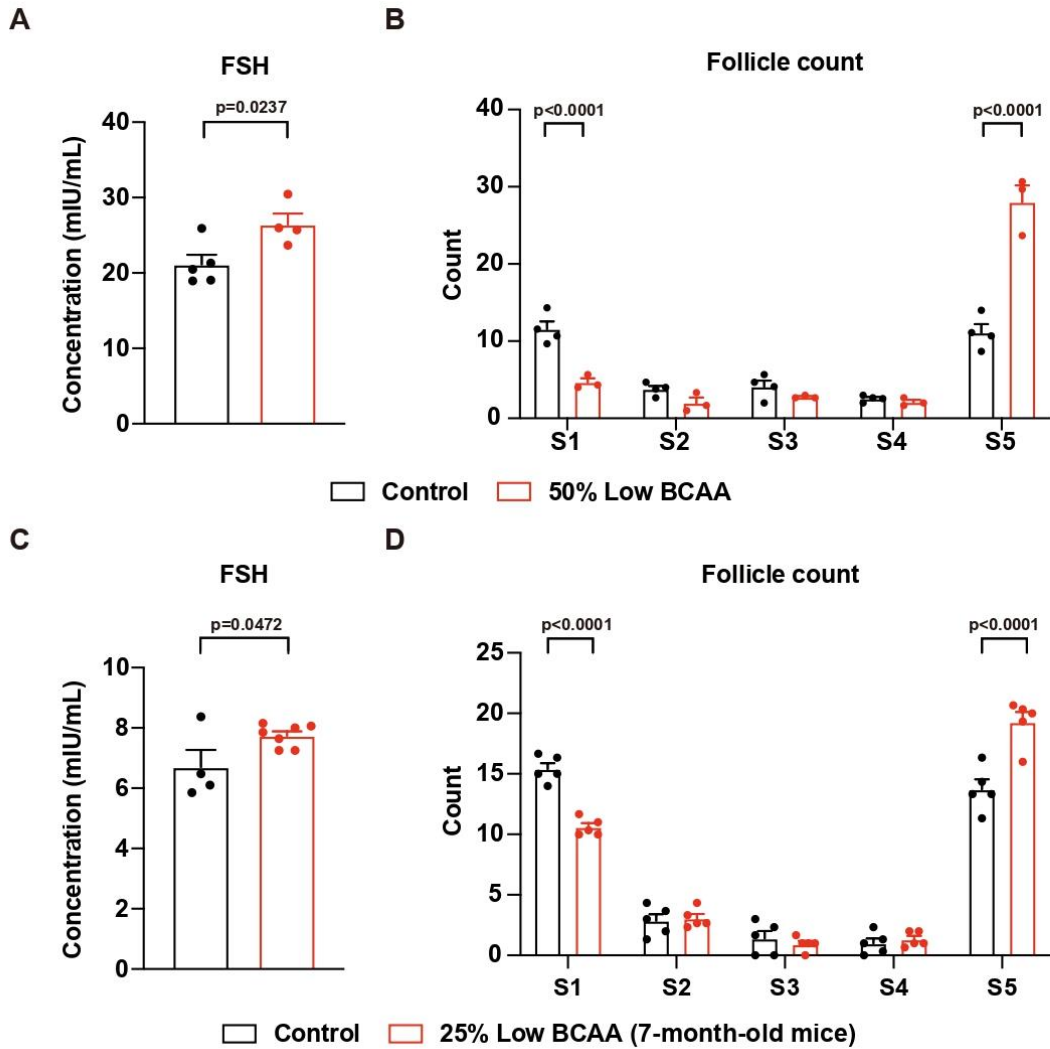
Appendix FigureS1. Low BCAA diet on young female mice.

A. The relative abundance of amino acid composition of the low BCAA diet. N=3; **B.** The energy in the diet. N=5; and **C.** The recipe of the diet from Trophic Animal Feed High-tech; **D.** The recipe of the diet from Research Diet, Inc. Error bars stand for SEM of biological repeats. The p value was calculated by two-tailed t-test with 2-way ANOVA correction.



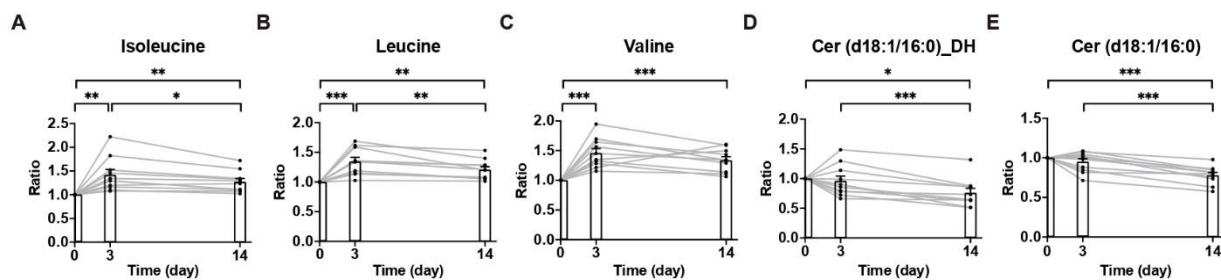
Appendix FigureS2. Metabolic features of young female mice fed a low BCAA diet.

A and B. The body weight of short (1.5 months; Control, N=5; Low BCAA, N=4) and long (3 months, N=10) term low BCAA diet; **C.** The relative abundance of BCAAs in serum. N=6; **D.** The relative energy expenditure measured by Comprehensive Lab Animal Monitoring System (CLAMS). N=3; **E.** The relative abundance of 3-hydroxybutyrate (3-HOB) and carnitine in serum. N=6; **F.** The mRNA level of Fgf21 in liver. N=6; **G.** The concentration of FGF21 in serum. N=4. Error bars stand for SEM of biological repeats. The p value was calculated by two-tailed t-test with 2-way ANOVA correction.



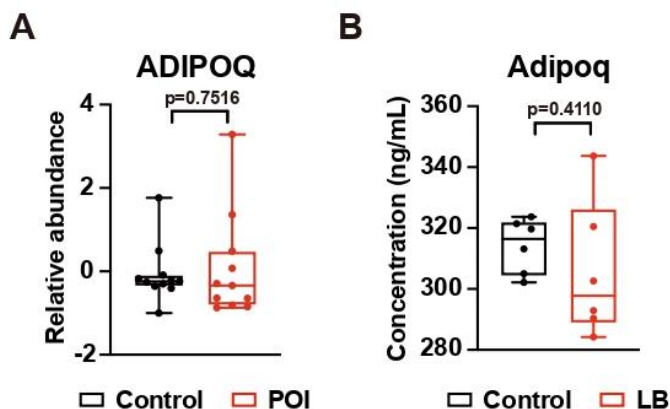
Appendix FigureS3. BCAA insufficiencies induce POI.

A. The serum concentration of FSH. Control, N=5; Low BCAA, N=4; and **B.** The changes of follicles in the mice on 50% low BCAA diet. Control, N=4; Low BCAA, N=3; **C.** Serum concentration of FSH. Control, N=4; Low BCAA, N=7; and **D.** The changes of follicles in 7-month-old mice on 25% low BCAA diet. N=5. S1, Primordial; S2, Primary; S3, Secondary; S4, Antral; S5, Atretic. Error bars stand for SEM of biological repeats. The p value was calculated by two-tailed t-test with 2-way ANOVA correction.



Appendix Figure S4. Relative abundance of metabolites in the serum of patients on a low carbohydrate high protein diet.

A. Serum concentration of isoleucine. N=7; **B.** Serum concentration of leucine. N=7; **C.** Serum concentration of valine. N=7; **D.** Serum concentration of cer (d18:1/16:0)_{DH}. N=7; **E.** Serum concentration of cer (d18:1/16:0). N=7. Error bars stand for SEM of biological repeats. The p value was calculated by two-tailed t-test with 2-way ANOVA correction.



Appendix Figure S5. The changes of adiponectin in POI patients and mice on a low BCAA diet.

A. Serum concentration of adiponectin in POI patients and healthy donors. N=18; **B.** Serum concentration of adiponectin in mice fed by low BCAA diet (LB) or control diet. N=6. Error bars stand for SEM of biological repeats.