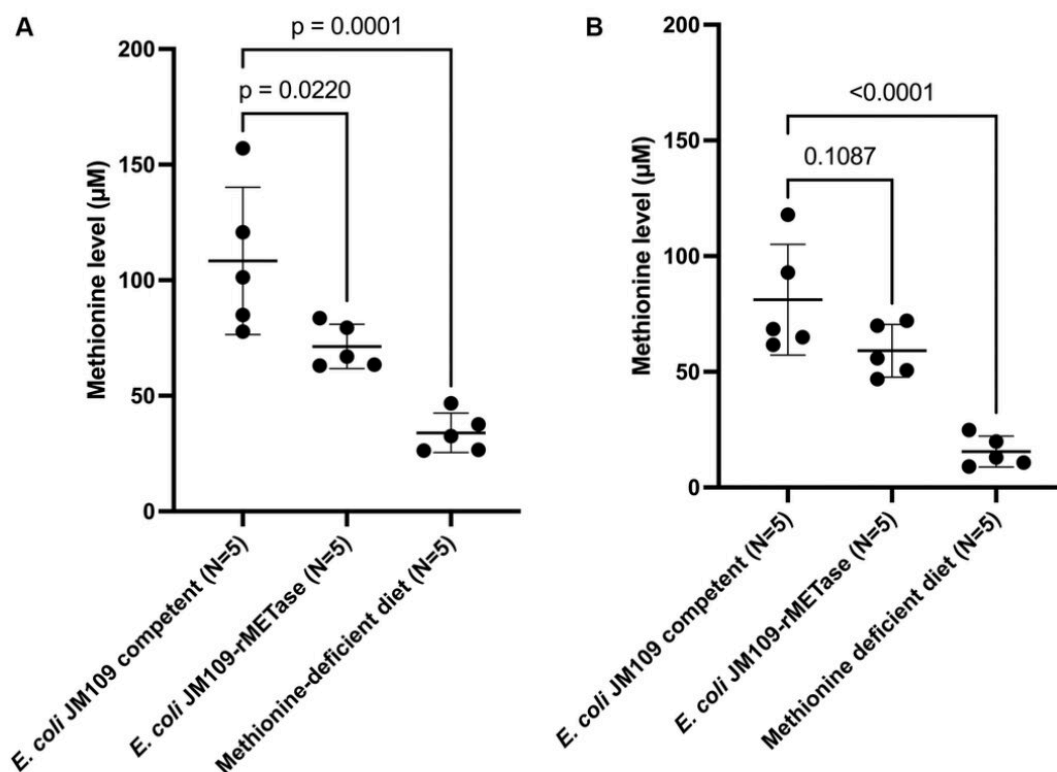


Methionine restriction observed to reverse old-age obesity in mice

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Blood methionine level at day 15 (A) and day 29 (B). Credit: 2023 Kubota et al

Obesity increases with aging. Methionine restriction affects lipid metabolism and can prevent obesity in mice. In a new study published in the journal *Aging*, researchers from AntiCancer Inc., University of California San Diego and Showa University School of Medicine

observed C57BL/6 mice double their body weight from 4 to 48 weeks of age and become obese. The team then evaluated the efficacy of oral administration of recombinant-methioninase (rMETase)-producing *E. coli* (*E. coli* JM109-rMETase) or a methionine-deficient diet to reverse old-age-induced obesity in C57BL/6 mice.

"In the present study we tested a low-methionine diet to reverse old-age-induced obesity. [...] *E. coli* JM109-rMETase was also tested in the present study to reverse old-age-induced obesity," state the researchers.

Fifteen C57BL/6 male mice aged 12–18 months with old-age-induced obesity were divided into three groups. Group 1 was given a normal diet supplemented with non-recombinant *E. coli* JM109 cells orally by gavage twice daily; Group 2 was given a normal diet supplemented with recombinant *E. coli* JM109-rMETase cells by gavage twice daily; and Group 3 was given a methionine-deficient diet without treatment.

The administration of *E. coli* JM109-rMETase or a methionine-deficient diet reduced the blood methionine level and reversed old-age-induced obesity with significant weight loss by 14 days. There was a negative correlation between methionine levels and negative body weight change. Although the degree of efficacy was higher in the methionine-deficient diet group than in the *E. coli* JM109-rMETase group, the present findings suggested that oral administration of *E. coli* JM109-rMETase, as well as a methionine-deficient diet, are effective in reversing old-age-induced obesity.

"In conclusion, the present study provides evidence that restricting methionine by either a low-methionine diet or *E. coli* JM109-rMETase has clinical potential to treat old-age-induced obesity," say the researchers.

More information: Yutaro Kubota et al, Old-age-induced obesity

reversed by a methionine-deficient diet or oral administration of recombinant methioninase-producing *Escherichia coli* in C57BL/6 mice, *Aging* (2023). [DOI: 10.18632/aging.204783](https://doi.org/10.18632/aging.204783)

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