

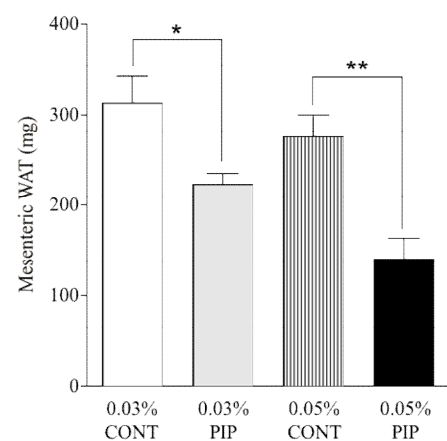
Black pepper and its pungent component piperine suppress adipose tissue deposition due to high energy diet in mice¹⁾

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We have clarified that various piperine (PIP) analogs in black pepper activate TRPV1 and TRPV1 agonists other than PIP can enhance energy metabolism²⁾. Both TRPV1 and TRPA1 agonists can enhance energy metabolism. Therefore, we investigated energy metabolism enhancement by pepper by examining suppression of body fat accumulation in mice due to PIP and black pepper (BP) intake. Five-week-old C57BL/6J male mice (Japan SLC, Shizuoka, Japan) were used and housed individually. To induce adiposity, mice were fed a high-fat, high-sucrose (HFS) diet containing 31.9% carbohydrate including sucrose, 25.0% protein and 48.0% fat on an energy basis. After 4 weeks of feeding, blood was withdrawn and tissues were dissected under ether anesthesia.

Total food intake and total energy intake over 4 weeks showed similar values among all groups. Visceral fat weights decreased significantly in the mice fed diets of 0.03% or 0.05% PIP. Body weight in the 0.05% PIP group also decreased significantly. In the mice fed a diet of 1.0% BP, body weight and visceral fat weights decreased significantly. For all parameters tested, the 1.0% BP group tended to show values slightly lower than those of the 0.03% PIP group. Expression of thermogenic protein uncoupling protein 1 tended to increase in the mice on the 1.0% BP diet.



These results indicate that BP suppresses the effect of body fat accumulation mainly through the action of PIP. However, since the suppressive effects on BP was greater than that of PIP alone, fat accumulation can be influenced not only by PIP but also by other BP components.

1. Y. Okumura, M. Narukawa, T. Watanabe: *Biosci. Biotechnol. Biochem.*, **74** (8), 1545-49 (2010).
2. Y. Okumura, M. Narukawa, Y. Iwasaki, A. Ishikawa, H. Matsuda, T. Watanabe: *Biosci. Biotechnol. Biochem.*, **74** (5), 1068-72 (2010).