



Two studies recently published in the *Journal of Clinical Investigation* have shown that the volume of brown adipose tissue (BAT) increases following cold acclimation. The authors suggest that their findings could point the way to new obesity therapies.

In the first study, 17 healthy people were exposed to temperatures of 15–16°C for 6 h a day for 10 days. To determine the activity of BAT, the participants were cooled until shivering occurred. The temperature was then raised slightly to induce nonshivering thermogenesis. The activation of BAT was determined via cold-induced glucose uptake using ¹⁸F-FDG-PET/CT imaging and energy expenditure by indirect calorimetry before and after cold acclimation.

The researchers found that BAT activity and volume increased after cold acclimation. As BAT activity increased, nonshivering thermogenesis also increased. Of note, no differences between the male and female participants were observed for BAT activity or cold acclimation. On the basis of these findings, the investigators suggest that a variable indoor environment with frequent exposure to cold temperatures could increase energy expenditure and therefore help to counteract the current obesity epidemic.

“We want to know what the results and BAT activity mean in daily life,” says corresponding author Wouter van Marken Lichtenbelt. “To what extent can people influence their cold-induced thermogenesis? What does this mean for our energy balance?” Further studies are planned to answer these questions.

The second study used chronic cold exposure to investigate whether BAT could be reactivated and BAT mass increased in 32 healthy men with low or undetectable BAT activity. As increasing cold exposure is often not feasible in daily life, the researchers also investigated the effects of daily administration of capsinoids—a substance found in chilli peppers—for 6 weeks. Capsinoids are known to increase BAT thermogenesis, so might also induce increased BAT mass.

The participants were either exposed to temperatures of 17°C for 2 h per day for 6 weeks, or received 9 mg of capsinoids daily for 6 weeks. Cold exposure and ingestion of capsinoids increased BAT activity and energy expenditure, and also resulted in weight loss. These results occurred even in patients with previously undetectable metabolically active BAT. “Our results could contribute to developing practical, easy and effective antiobesity regimens,” says lead author Takeshi Yoneshiro.

Yoneshiro and colleagues are now planning to confirm these findings in patients with obesity and to investigate the effects of cold exposure and capsinoids in other metabolic disorders. Whether capsinoids could be used as an antiobesity food supplement will also be explored.

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Original articles van der Lans, A. A. J. J. *et al.* Cold acclimation recruits human brown fat and increases nonshivering thermogenesis. *J. Clin. Invest.* doi:10.1172/JCI68993 | Yoneshiro, T. *et al.* Recruited brown adipose tissue as an antiobesity agent in humans. *J. Clin. Invest.* doi:10.1172/JCI67803