

News Summary

P3-338: Adults, especially women, have calorie-burning “brown fat”

Keeping your baby fat turns out to be a good thing, as long as it is “brown fat”—the kind that burns calories, according to a study that found adults have much more of this type of fat than previously thought. The results, which suggest a new way to treat obesity, will be presented Friday at The Endocrine Society’s 91st Annual Meeting in Washington, D.C.

Brown fat burns off calories and generates heat in babies and small mammals. Most of our body fat is white fat, which also provides insulation but stores calories. It becomes “bad” fat when you have too much. The “good” fat—brown fat—was considered essentially nonexistent in human adults.

“We now know that it is present and functional in adults,” said the study’s lead author, Aaron Cypess, MD, PhD, MMSc, of the Joslin Diabetes Center in Boston. “Three ounces of brown fat can burn several hundred calories a day.”

For the first time, the researchers were able to measure patches of brown adipose tissue—brown fat—in people, thanks to a high-tech imaging method that combines positron emission tomography and computed tomography, called PET/CT. By evaluating biopsy tissue of what appeared to be brown fat on PET/CT scans in some patients who had neck surgery, the authors confirmed that they were, indeed, looking at stores of brown fat. More than 1,970 study participants had PET/CT scans, from mid-skull to mid-thigh.

Brown fat (when it could be detected) was located in an area extending from the front of the neck to the chest. Of the subjects who had detectable brown fat, about 6 percent had 3 ounces or more of the fat.

“We believe that this percentage greatly underestimates the number of adults in the population who have a large amount of brown fat,” said Cypess, whose results were published in the April 9 issue of the *New England Journal of Medicine*, along with those of two other independent studies of brown fat in adults.

That is because one of the other studies found that PET/CT can detect much more brown fat if people are in a room cooled to 61°F. Likewise, Cypess and his colleagues found that people who underwent PET/CT in the winter had more brown fat activity than those scanned in the summer.

They also discovered that brown fat is most abundant in young women and least frequent in older, overweight men. In fact, women were more than twice as likely as men to have substantial amounts of brown fat.

“One theory for this is that women may have less muscle mass overall, so they need more brown fat to generate heat and keep warm,” Cypess said.

Brown fat provides a new focus for developing treatments protecting against obesity and its complications, according to Cypess. However, it may not be enough to lose weight to just have brown fat. The researcher said, “We may have to turn it on and make sure it burns calories in a regulated, safe manner.”