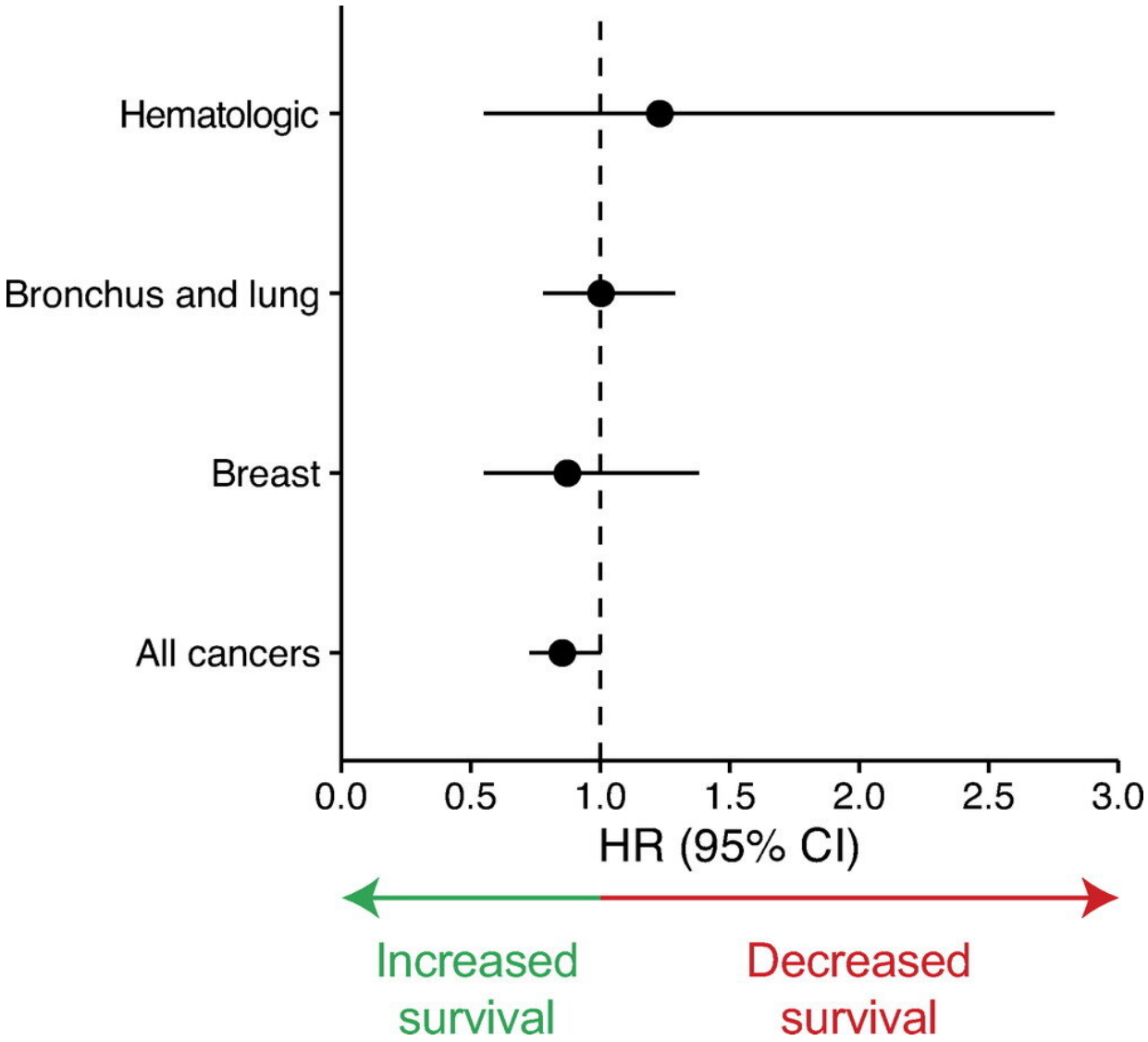
Brown fat may help improve cancer survival rates

March 22 2023



Brown fat status is not associated with survival in patients with cancer-associated cachexia. Forest plot of the adjusted hazard ratio of brown fat predicting

mortality in all patients with cachexia (n = 8,649), in patients with cachexia and breast cancer (n = 1,087), in patients with cachexia and bronchus and lung cancer (n = 1,776) and in patients with cachexia and hematologic cancers (n = 1,136). All hazard ratios, 95% confidence intervals (CI) and P values were calculated using an adjusted Cox proportional hazards model. The HR of BAT predicting mortality in the entire cohort was adjusted for age at cancer diagnosis, sex, BMI, ambient temperature, comorbid conditions (heart failure, type 2 diabetes, coronary artery disease, cerebrovascular accident, dyslipidemia), β-blockers, cancer site and cancer stage. Values highlighted in black have a P value equal to or greater than 0.05. BAT, brown adipose tissue; BMI, body mass index; HR, hazard ratio. Credit: *American Journal of Physiology-Endocrinology and Metabolism* (2022). DOI: 10.1152/ajpendo.00187.2022

Brown fat is not linked to cancer-associated loss of body weight and muscle mass, a common condition known as cachexia, according to a new joint study from The Rockefeller University and Memorial Sloan Kettering Cancer Center in New York City. In addition, researchers discovered a trend suggesting brown fat, also called brown adipose tissue, may help improve survival in people with cancer. The findings are published ahead of print in the *American Journal of Physiology-Endocrinology and Metabolism*.

Brown fat is connected to many health benefits, such as lower rates of heart disease, diabetes and high blood pressure. Yet, some cancer studies in mice suggest brown fat may lead to cachexia. In a new study, researchers investigated if the same is true in people.

The research team studied more 14,000 adults ages 18 and older from June 2009 through March 2018. People with more than one cancer diagnosis or unstageable cancers were excluded, in addition to other factors. More than 8,600 people in this study were identified to have cachexia based on body mass index and a previous cachexia diagnosis

within 12 months of a cancer diagnosis, figures consistent with prior studies. Participants with cachexia were more likely to be older and male, have a greater percentage of weight loss and be current smokers. They were also more likely to self-identify as Asian or Black. Lastly, cachexia was more prevalent in participants with cancers of the head and neck, brain and upper gastrointestinal tract.

The researchers reported a "significantly lower prevalence of cachexia" in people who had brown fat compared to those without brown fat. To further test for cancer-specific associations, the researchers analyzed tumor sites from 100 people with breast, bronchus and lung, and blood cancers who also had brown fat in their bodies.

"Brown fat is linked to a broad spectrum of health benefits in humans," said Paul Cohen, MD, Ph.D., of The Rockefeller University and lead author of the study. "We hope that our findings will increase interest in studying brown fat and leverage its health benefits in patients with and without cancer."

More information: Mahmoud Eljalby et al, Brown adipose tissue is not associated with cachexia or increased mortality in a retrospective study of patients with cancer, *American Journal of Physiology-Endocrinology and Metabolism* (2022). DOI: 10.1152/ajpendo.00187.2022

Provided by American Physiological Society