

Reported January 11, 2010

The Key to Obesity?

(Ivanhoe Newswire) – Researchers have discovered a molecular mechanism that controls energy expenditure in muscles and helps determine body weight. This could lead to a new medical approach in treating obesity.

Mayo researchers collaborating with investigators at the University of Iowa, University of Connecticut and New York University (NYU) found that the energy-saving mechanism is controlled by adenosine triphosphate, or ATP-sensitive potassium (KATP) channels. ATP is the "energy currency" used by cells in the body.

As in humans, excess energy from food is stored as glycogen or fat that can be converted into ATP according to energy demand. Eliminating the KATP channel forces the body to use energy less efficiently, consuming more and storing less, even on a high-calorie "Western" diet.

"While mechanisms that preserve energy are naturally protective in times of food shortage or environmental stress, they promote obesity in a sedentary, modern society," study author Alexey Alekseev, Ph.D., Mayo Clinic electrophysiologist, was quoted as saying. "Our findings suggest that therapeutic targeting of the KATP channel function, specifically in muscle, could offer a new option for obese patients with lower capacity for exercise."

"By sensing cellular energy content, KATP channels continuously, at any activity level, optimize energy use and define the balance between energy availability and consumption," explained Dr. Alekseev. "In principle, a positive energy balance favoring weight gain could be reversed by targeting muscle KATP channels to control obesity in patients with low to moderate exercise capacity imposed by the overweight state."

SOURCE: *Cell Metabolism*, January 5, 2010