MOBILIZING BROWN FAT THERMOGENESIS

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HINTERGRUND

Brown adipose tissue (BAT) harbors a remarkable capacity to evoke energy expenditure through its uncoupling protein 1 (UCP1) dependent thermogenic function. Upon activation, Ucp1 dissipates food energy as heat by uncoupling mitochondrial respiration from ATP synthesis. Therefore, BAT provides a potential therapeutic target against obesity and diabetes. As sympathomimetic drugs exhibit detrimental cardiovascular effects, their application as BAT-stimulating agents is considered problematic.

LÖSUNG

The endogenously occurring natural peptide secretin is a non-adrenergic activator of BAT. Treatment of primary brown adipocytes with unmodified recombinant secretin stimulates UCP1-mediated thermogenesis to a similar extent as an established adrenergic agonist (see Figure A, B). Moreover, secretin exerts an inhibitory effect on food intake (see Figure C,D).
Vorteile

Treatment with secretin or a small molecule receptor agonist provides a novel route of brown fat activation circumventing the downsides of adrenergic agonists, like poor subtype receptor specificity and cardiovascular side effects. Secretin promotes negative energy balance by both increasing energy expenditure and mediating satiation and thereby decreasing energy intake.