Docket #: S21-052

Lactoyl amino acids for the treatment of metabolic disease

Stanford and Baylor researchers have discovered an exercise-induced lactate-derived metabolite that mediates the anorexigenic and anti-obesity effects of physical activity.

Obesity and obesity-associated metabolic diseases are major health problems. There is increasing interest in identifying 'molecular transducers' that might mediate the cardiometabolic benefits of exercise. To this end, Stanford and Baylor researchers have found that lactoyl-phenylalanine, an exercise-induced metabolite, suppresses appetite by direct action on Agrp and Pomc neurons in the brain. The researchers have shown that administration of lactoyl-phenylalanine to obese mice suppresses food intake, reduces body weight, and improves glucose homeostasis.

Stage of Development
In vivo: Researchers have shown that lactoyl phenylalanine hyperpolarizes Agrp neurons in electrophysiological studies and also reduces body weight in mice.

Applications

- Therapeutic for obesity
- Therapeutic for diabetes
- Therapeutic for other metabolic disorders

Advantages

- Novel metabolite with newly identified function
- Novel structure

Publications

- Li, V. L., He, et al. (2022). An exercise-inducible metabolite that suppresses feeding and obesity. Nature, 606(7915), 785-790.
- Conger, Krista. Weight loss caused by common diabetes drug tied to "anti-hunger" molecule in study. *Stanford Medicine News*(2024).

Patents

- Published Application: WO2022235557
- Published Application: 20240189266

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