Weight Management Drugs using Selective Melanocortin Ligands

Melanocortin ligands offer dual pharmacological profile

New tetrapeptide amino acid compounds can be developed into weight management drugs to treat obesity or stimulate appetite in underweight patients. These structures bind to both the melanocortin-3 and melanocortin-4 receptors, which are involved in appetite and weight control. They have a unique dual pharmacological profile: simultaneously activating the melanocortin-3 receptor and blocking activation of the melanocortin-4 receptor. In addition, a series of closely related new compounds called retro-inverso isomers selectively block the activation of the melanocortin-3 receptor but neither activates nor blocks the melanocortin-4 receptor.

Treats both obese and underweight patients

While many signaling systems control appetite and body weight, two melanocortin receptors are critical in controlling appetite and mediating weight. The melanocortin-4 receptor affects immediate satiety and the melanocortin-3 receptor affects long-term energy needs and food consumption. Current anti-obesity drugs targeting the melanocortin-4 receptor have a number of side effects, including increased blood pressure. Evidence suggests that targeting the melanocortin-3 receptor would induce weight loss without increasing blood pressure. The new ligands activate the melanocortin-3 receptor addressing the problem of obesity and its comorbidities (e.g., diabetes, heart disease, and hypertension), while the ligands that block the activation of the melanocortin-4 receptor could induce an increase in appetites and address related diseases such as cachexia, the general wasting due to chronic illnesses (e.g., HIV/AIDS, some cancers).

Phase of Development

- In vitro assessment

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Features

- Unique dual pharmacological profile: simultaneously activates melanocortin-3 receptors and blocks activation of melanocortin-4 receptors
- Melanocortin-3 receptors activators address obesity; reduces appetite
- Melanocortin-4 receptors blockers address cachexia; increases appetite

Applications

- Weight control/weight management
- Obesity management (and comorbidities)
- Appetite management
- Dietary supplements

Interested in Licensing?

The University relies on industry partners to scale up technologies to large enough production capacity for commercial purposes. The license is available for this technology and would be for the sale, manufacture or use of products claimed by the issued patents. Please contact Kevin Anderson to share your business needs and technical interest in this technology and if you are interested in licensing the technology for further research and development.

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