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COMBINATORIAL GENE CONSTRUCT AND NON-VIRAL DELIVERY FOR ANTI-OBESITY

THERAPEUTICS

Anti-obesity gene therapy that contains plasmid linker technology and multiple therapeutic genes.

TECHNOLOGY TYPE

Drug Delivery
Gene Therapy
Metabolism, Endocrinology, & Diabetes

STAGE OF DEVELOPMENT

- Demonstrated efficacy in diet-induced obese mice.

- Developing practical non-toxic gene carriers and finding alternative administration routes.

IP PROTECTION

Nationalized PCT Pending in the United States.

Combinatorial Gene Construct and Non-Viral Delivery for Anti-Obesity. *WO2017082946A1*

LEARN MORE

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TECHNOLOGY SUMMARY

Obesity is a risk factor for a variety of conditions, including diabetes, cancer, and heart disease. Single target protein therapies demonstrate poor efficacy as the body adapts quickly, activating alternate mechanisms to maintain its original state. Combinatorial approaches produce better results, but also greater side effects, leading to increased costs that limit patient compliance.

A novel combinatorial gene construct delivered using a non-viral vector demonstrates improved ability against obesity without significant side effects. The gene construct utilizes two genes that have key roles in the regulation of feeding inhibition, gastric emptying, and energy expenditure. These genes are administered with non-viral polymeric vector linear polyethylenimine, which is less toxic than other polymer vectors and not recognized by the immune system. The therapeutic efficiently transports DNA throughout the blood when administered weekly via intraperitoneal injections.

FEATURES AND BENEFITS

- Reduces adipose tissue in diet-induced LEP-resistant obesity.
- Decreases administration frequency and treatment cost.
- Utilizes transient expression, meaning the construct does not integrate into the genome, resulting in a reduced cancer risk.

RECENT PUBLICATIONS

Park, H., Cho, S., Han, Y. H., Janat-Amsbury, M.M., Boudina, S., & Bae, Y. H. (2015). Combinatorial gene construct and non-viral delivery for anti-obesity in diet-induced obese mice. *Journal of Controlled Release. 207*:154-162. doi: 10.1016/j.jconrel.2015.03.016

Park, H., Cho, S., Janat-Amsbury, M.M., Bae, Y. H. (2015). Enhanced thermogenic program by non-viral delivery of combinatory browning genes to treat diet-induced obesity in mice. *Biomaterials*. 73: 32-41. doi: 10.1016/j.jconrel.2015.03.016

INVENTOR PROFILE

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