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Novel Diabetes Treatment

Lead compounds that inhibit the memapsin 1 enzyme are developed to increase pancreatic beta cell mass, offering a therapeutic approach for diabetes treatment and improved glucose control.

Diabetes is a widely prevalent disease that currently affects 25.8 million people in the United States. The predominant form of diabetes is characterized by hyperglycemia resulting from a combination of reduction in pancreatic beta cell activity and mass, which leads to insufficient insulin production. An enzyme called memapsin 1 is known to be part of the biochemical pathway that leads to the problems with pancreatic beta cells and ultimately causes insulin deficiency. Memapsin 1 deactivates a transmembrane protein shown to increase beta cell proliferation and improve glucose stimulated insulin secretion. The transmembrane protein is deactivated when it undergoes ectodomain cleavage in a process triggered by memapsin 1.

Researchers at Purdue University in collaboration with Oklahoma Medical Research Foundation have developed and assayed a series of lead compounds that act as memapsin 1 inhibitors and increase pancreatic beta cell mass. Treatment with these compounds may also be complimented by other therapeutics that increase insulin production, improve glucose homeostasis, or inhibit hyperglucagonemia.

Advantages:

-Improved glucose homeostasis

-Specific enzyme pathway regulation

Potential Applications:

-Medical/Healthcare

-Pharmaceuticals

TRL: 4

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Pharmaceuticals/Other

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