Novel GLP-1 and GIP dual receptor agonist peptides show neuroprotective effects

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Novel GLP-1 and GIP dual receptor agonist peptides show neuroprotective effects

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Research Abstract
Neurotrophins such as NGF and BDNF have shown neuroprotective effects in several animal models of
neurodegenerative disorders. However, these growth factors do not cross the blood- brain barrier (BBB),
which limits their practical application. Fortunately, growth factors exist that can cross the BBB, such as
insulin and the incretin hormones. Recent investigations of the neuroprotective properties of the incretins

glucagon-like peptide-1 (GLP-1) and glucose-dependent insulinotrophic polypeptide (GIP) have shown good results in preventing neurodegenerative processes in several mouse models of Alzheimer disease (AD) and also in animal models of Parkinson's disease. The GLP-1 receptor agonist liraglutide has shown impressive effects in a transgenic mouse model of AD, and has shown protective effects in the brains of AD patients in an ex vivo study. Based on these findings, a clinical trial of liraglutide in AD patients is under way. A recent clinical trial of the older GLP-1 receptor agonist exendin-4 in Parkinson's patients has shown impressive results. This demonstrates the great neuroprotective potential that incretin analogues have. We also have shown that analogues of the sister incretin hormone GIP are neuroprotective in animal models of AD.

Such protease resistant analogues of incretins have been developed as treatments for diabetes, and some are available on the market. New drug development programs have produced novel dual-agonist GLP-1/GIP analogues that have superior properties to single receptor agonists. Some are already in clinical trials for diabetes and have shown good effects with few side effects in humans. We want to test much improved GLP-1/GIP dual analogues in a mouse model of AD at medium and at old age. In addition, we want to test analogues of the incretin hormone oxymodulin, which has shown great potential in pilot studies and may be superior to the GLP-1 and GIP analogues. All of these novel drugs do not directly affect blood glucose levels and can be given to people that do not have diabetes.

Further information available at:

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