

Exendin-4 and Alzheimer's Disease

Exendin-4 (E9417) is a peptide that acts as an agonist on the glucagon-like peptide 1 (GLP-1) receptor; it was first found in the venom of *Heloderma suspectum*, the Gila monster. GLP-1 is an endogenous peptide that induces glucose-dependent stimulation of insulin secretion. As an agonist at GLP-1 receptors, exendin-4 also stimulates insulin secretion and exhibits activity in the treatment of diabetes.

Recent research links neurodegenerative diseases such as Alzheimer's disease with dysregulation of brain insulin and insulin-like growth factor (IGF) signaling mechanisms¹. Reduced levels of insulin and IGF have been found in subjects with Alzheimer's disease or other dementia-associated neurodegenerative diseases. Additionally, diabetes is a known risk factor for Alzheimer's disease.

Exendin-4 may be useful in the treatment of Alzheimer's disease due to its ability to stimulate

insulin secretion. GLP-1 and its analogues offer protection to memory formation processes, synapses, and synaptic formation, preventing oxidative stress-induced neuronal damage; additionally, they reduce amyloid- β plaque formation². Exendin-4 is also centrally available as it crosses the blood-brain barrier³.

In models of Parkinson's disease and cerebral ischemia, exendin-4 protects motor activity. This peptide decreases brain damage and improves outcomes in animal models of transient middle cerebral artery occlusion stroke⁴. The same study shows that exendin-4 protects dopaminergic neurons against degeneration, preserves dopamine levels, and improves motor function in animal models of Parkinson's disease.

LKT Laboratories also carries other GLP-1 receptor agonists, such as **Exendin-3 (E9416)** and **GLP-1, 7-37 (G4482)**.

References:

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4. Li Y, Perry T, Kindy MS, Harvey BK, et al. Proc Natl Acad Sci U S A. 2009 Jan 27;106(4):1285-90.



Heloderma suspectum



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