

NEURO SCIENCES

DIHEXA

The World's Most Potent Cognitive Enhancement Compound

Unlocking the brain's full regenerative potential

10¹⁰ × More Potent
than BDNF in vivo

HGF/MET Pathway
Direct agonist activation

Neuroplasticity
Synaptic density increase

RESEARCH COMPOUND

CAS: 1401708-83-5 · MW: 814.95 g/mol · Formula: C₁₄H₁₆N₂O₂

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What is Dihexa?

A breakthrough oligopeptide engineered for extraordinary cognitive performance

Overview

Dihexa (N-hexanoic-Tyr-Ile-(6) aminohexanoic amide) is a synthetic oligopeptide derived from Angiotensin IV and developed through pioneering research at Washington State University. It is recognized as one of the most potent pro-cognitive compounds ever characterized, capable of directly activating the hepatocyte growth factor (HGF) / MET receptor pathway — the same signaling cascade responsible for synaptic formation, neural repair, and long-term memory consolidation in the mammalian brain.

10

10 Million Times More Potent Than BDNF

In preclinical models, Dihexa demonstrated cognitive improvements at doses up to 10 million-fold lower than brain-derived neurotrophic factor (BDNF), the brain's own growth factor.

Mechanism of Action

Dihexa functions as a potentiator of hepatocyte growth factor (HGF) signaling. It binds to HGF and facilitates its interaction with the MET receptor tyrosine kinase, dramatically amplifying downstream signaling. This cascade activates multiple neuroprotective and neurogenic pathways including PI3K/Akt and MAPK/ERK, ultimately driving:

Synaptogenesis

Formation of new synaptic connections between neurons

Dendritic Arborization

Increased branching complexity of dendrites

Neuroprotection

Defense against oxidative stress and excitotoxicity

Memory Consolidation

Strengthening of long-term potentiation (LTP)

Research Origins

Dihexa was synthesized and characterized by Dr. Joseph Harding and Dr. John Wayman at Washington State University. Published in the Journal of Neurochemistry (2013), their research demonstrated that Dihexa could rescue cognitive deficits in rodent models of Alzheimer's disease and age-related memory decline, achieving effects that conventional neurotrophin therapies could not replicate due to BBB penetration limitations and dosing challenges.

Key Benefits & Research Findings

Memory Enhancement

Dramatically improves object recognition and spatial memory in rodent models. Performance gains observed in Morris Water Maze tests were far beyond control groups.

Rapid Onset

Cognitive improvements measurable within days of administration in animal studies, suggesting fast synaptic remodeling versus slow neurotrophic factor timelines.

BBB Penetrant

Dihexa crosses the blood-brain barrier efficiently when administered subcutaneously or orally, a critical advantage over peptide therapies that cannot reach CNS targets.

Neuroprotective

Shields neurons against amyloid-beta toxicity and oxidative stress, making it a candidate for neurodegenerative disease research applications.

Synaptic Density

Increases dendritic spine density and the complexity of synaptic arbors, reflecting structural changes in learning-associated brain regions.

Dose Efficiency

Active at nanomolar concentrations, enabling extremely low dosing thresholds that reduce off-target interaction risk in research protocols.

Research Highlights at a Glance

Parameter	Finding	Model
Potency vs. BDNF	10 million-fold greater	Rodent in vivo
Memory improvement	Significant vs. control	Morris Water Maze
Dendritic spine density	Marked increase	Hippocampal neurons
Neuroprotection (A β)	Demonstrated	Alzheimer's model
BBB penetration	Confirmed	SC & oral admin.
Onset of cognitive effect	Days (not weeks)	Aged rodent model

NOTE: All findings are based on preclinical animal studies. Dihexa is not approved for human use by the FDA or any regulatory body. This document is for informational and research purposes only.

Chemical Profile & Specifications

Structural and physicochemical characteristics of the Dihexa oligopeptide

CHEMICAL IDENTITY

IUPAC Name:	N-hexanoyl-L-tyrosyl-L-isoleucyl-(6-aminocaproic acid)amide	CAS Number:	1401708-83-5
Molecular Formula:	C ₄₄ H ₅₈ N ₁₀ O ₇	Molecular Weight:	814.95 g/mol
Peptide Class:	Oligopeptide (Angiotensin IV analog)	Primary Target:	HGF / MET receptor pathway

Physicochemical Properties

Solubility

Water-soluble (DMSO, saline, PBS)
✓ **Easy reconstitution**

Storage

-20°C, protect from moisture & light
✓ **Stable long-term**

Purity

≥98% (HPLC verified)
✓ **Research grade**

Form

Lyophilized powder
✓ **Stable shipping**

pH Stability

Stable at pH 4–8
✓ **Flexible protocols**

BBB Penetration

Confirmed in vivo
✓ **CNS accessible**

Dihexa vs. Conventional Nootropics

Feature	Dihexa	Racetams	BDNF	NGF
Potency	Exceptional	Moderate	High	High
BBB Penetration	Yes	Yes	No	No
Synaptic Remodeling	Yes	Partial	Yes	Yes
Effective Dose	Nanomolar	Micromolar	Nanomolar	Nanomolar
Onset Speed	Days	Hours	Weeks	Weeks
Stability (Oral)	Good	Excellent	Poor	Poor

Unlocking New Frontiers

in Neuroscience Research

Alzheimer's Disease

Rodent models show Dihexa rescues spatial memory deficits induced by amyloid-beta oligomers and scopolamine.

Age-Related Cognitive Decline

Aged animals treated with Dihexa demonstrate restoration of cognitive performance to levels seen in young adults.

Traumatic Brain Injury

HGF/MET pathway activation supports axonal regeneration and reduces secondary injury cascades post-TBI.

Neuroplasticity Research

Ideal for studying synaptogenesis, LTP mechanisms, and structural remodeling of neural circuits.

Nootropic Pharmacology

As a benchmark compound for testing cognitive enhancement hypotheses at molecular and behavioral levels.

Ready to Advance Your Research?

Dihexa is available as a research-grade lyophilized peptide. Contact our team for specifications, SDS documentation, custom synthesis, and bulk research inquiries.

Website: www.neuro-sciences-research.com **Email:** research@neuro-sciences.com **Phone:** +1 (800) 555-NEURO

Dihexa is a research compound not approved for human use. All data cited is from preclinical studies. This brochure is for informational purposes only.