

Product Datasheet

PE154

Catalog No. **BP-02157** · CAS **1192750-33-6** · Form **free base** · Physical state **other** · Color **Light yellow to yellow** · Version **1.0** · Revision **2026-09-04**

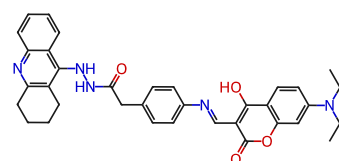
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Target Cholinesterase (ChE)	Research area Neurological Disease
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Molecular formula **C₃₅H₃₅N₅O₄**

Molecular weight **589.6835**

STRUCTURE



DESCRIPTION

PE154 (Compound 13) is a potent fluorescent inhibitor of human acetylcholinesterase (AChE) and butyrylcholinesterase (BChE) (IC₅₀s=280 pM and 16 nM, respectively). PE154 can label β-amyloid plaques in histochemical analysis.

BIOLOGICAL ACTIVITY

n Vitro

PE154 reversibly binds to human acetylcholinesterase through active site cation-π stacking and interactions with the peripheral anionic site; its binding to human butyrylcholinesterase relies on active site cation-π stacking, with reduced effects on the peripheral site.

PE154 binds to the β-sheet structure of Aβ plaques independently of cholinesterase binding, exhibits enhanced fluorescence upon binding to cholinesterase, and can target Aβ deposits in the hippocampus when delivered via nanoparticle carriers.

PE154 (20 nM; 300 s) causes a significant increase in fluorescence intensity upon binding to purified recombinant human acetylcholinesterase and human butyrylcholinesterase, but this phenomenon is not observed when it binds to bovine serum albumin.

In Vivo

PE154 (2 μL (0.1 mg/mL); stereotaxic injection into dorsal hippocampus; single dose) selectively targets hippocampal β-amyloid plaques in aged triple-transgenic Alzheimer's disease model mice in vivo, with approximately 80% of rostral hippocampal Aβ plaques labelled as early as 4 hours post-intrahippocampal injection and labelling persisting for up to 7 days.

SOLUBILITY

Soluble in DMSO : 8.33 mg/mL

REFERENCES

- [1]. Brambilla D, et al. Nanotechnologies for Alzheimer's disease: diagnosis, therapy, and safety issues. *Nanomedicine : nanotechnology, biology, and medicine*. 2011 Oct;7(5):521-40.
- [2]. Härtig W, et al. In vivo labelling of hippocampal beta-amyloid in triple-transgenic mice with a fluorescent acetylcholinesterase inhibitor released from nanoparticles. *The European journal of neuroscience*. 2010 Jan;31(1):99-109.
- [3]. Elsinghorst PW, et al. A gorge-spanning, high-affinity cholinesterase inhibitor to explore beta-amyloid plaques. *Organic & biomolecular chemistry*. 2009 Oct 07;7(19):3940-6.
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