Product Data Sheet

Product Name: T807 (AV-1451)
Cat. No.: GC30789

Chemical Properties

Cas. No.	1415379-56-4		
SMILES	FC1=CC=C(C2=CC3=C(C=C2)C(C=NC=C4)=C4N3)C=N1		
Formula	$C_{16}H_{10}FN_3$	M.Wt	263.27
Solubility	DMSO : ≥ 16.6 mg/mL (63.05 mM)	Storage	Store at -20°C
General tips	For obtaining a higher solubility , please warm the tube at 37 ℃ and shake it in the ultrasonic bath for a while.Stock solution can be stored below -20℃ for several months.		
Shipping Condition	Evaluation sample solution : ship with blue ice All other available size: ship with RT , or blue ice upon request.		
Structure	T807 (AV-1451)		

Protocol

Kinase experiment:

10 mg/mL frozen brain homogenate aliquots are thawed and diluted 10-fold in binding buffer to 1 mg/mL. 500 µL of appropriate concentrations of non-radioactive T807 to be tested are combined with 400 µL of [3H] T807 (29.7 Ci/mmol) in a volume of 900 µL of binding buffer. The assay begins by addition of 100 µL of the 1 mg/mL brain homogenate to achieve a final concentration of 0.10 mg tissue/mL for radioligands. The final concentration of [3H] T807 is typically 1-2 nM. After incubation at room temperature for 60 minutes, the binding mixture is filtered and rapidly washed 5 times with 3 mL binding buffer. The filters are counted[2].

Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

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Animal experiment:

Mice: Six male mice at each time point are administered 250 mCi [18F]T807 (in 200 mL saline) via tail vein injection. At 5, 15, and 30 minutes after administration, the mice are anesthetized and 500-mL whole blood samples and centrifuged. After euthanasia, the liver, kidneys, skeletal muscle (right quadriceps), brain, and bone (femur) are harvested and weighed. Each of the tissue samples are transferred to gamma counter tubes and counted[1].

References:

[1]. Xia CF, et al. [(18)F]T807, a novel tau positron emission tomography imaging agent for Alzheimer's disease. Alzheimers Dement. 2013 Nov;9(6):666-76.

[2]. Marquié M, et al. Validating novel tau positron emission tomography tracer [F-18]-AV-1451 (T807) on postmortem brain tissue. Ann Neurol. 2015 Nov;78(5):787-800.

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Background

T807 a novel tau positron emission tomography (PET) tracer.

Aggregated tau protein is a major neuropathological substrate central to the pathophysiology of neurodegenerative diseases such as Alzheimer's disease (AD). In vitro autoradiography results show that [18F]T807 exhibits strong binding to PHF-tau positive human brain sections (Kd=14.6 nM). A comparison of autoradiography and double immunohistochemical staining of PHF-tau and Ab on adjacent sections demonstrates that [18F]T807 binding colocalizes with immunoreactive PHF-tau pathology, but does not highlight Ab plaques[1]. [18F]T807 strongly binds to tau lesions primarily made of paired helical filaments in Alzheimer's brains e.g. intra and extraneuronal tangles and dystrophic neurites. [18F]T807 off-target binding to neuromelanin- and melanin-containing cells and, to a lesser extent, to brain hemorrhagic lesions is identified[2].

[18F]T807 is able to cross the blood-brain barrier and ished out quickly in mice model. [18F]T807 clears rapidly from the brain, with activity values decreasing from 4.43% ID/g at 5 minutes to 0.62% ID/g at 30 minutes. Kidney elimination is a significant clearance pathway, resulting in a maximum tracer concentration of 14.99% ID/g in the kidneys at 5 minutes, which decreases to 5.52% ID/g at 30 minutes. The accumulation of activity in muscle and bone remain relatively low throughout the PET scan[1].

[1]. Xia CF, et al. [(18)F]T807, a novel tau positron emission tomography imaging agent for Alzheimer's disease. Alzheimers Dement. 2013 Nov;9(6):666-76. [2]. Marquié M, et al. Validating novel tau positron emission tomography tracer [F-18]-AV-1451 (T807) on postmortem brain tissue. Ann Neurol. 2015 Nov;78(5):787-800.

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