
Product Data Sheet

Product Name: NQTrp
 Cat. No.: GC17037

Chemical Properties

Cas. No. 185351-19-3

Chemical Name N-(1,4-dihydro-1,4-dioxo-2-naphthalenyl)-L-tryptophan

SMILES O=C(C=C(N[C@H](C(O)=O)CC1=CNC2=C1C=CC=C2)C3=O)C4=C3C=CC=C4

Formula $C_{21}H_{16}N_2O_4$ M.Wt 360.4

Solubility $\leq 1\text{mg/ml}$ in ethanol; 20mg/ml in DMSO; 20mg/ml in dimethyl formamide Storage Store at -20°C

General tips For obtaining a higher solubility , please warm the tube at 37°C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C 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

Background

NQTrp, also known as 1,4-naphthoquinon-2-yl-L-tryptophan, is an inhibitor of the Alzheimer's disease-associated β -amyloid [1].

Alzheimer's disease (AD) is a progressive neurodegenerative disorder and the early soluble oligomeric species of $A\beta$ plays a fundamental role in the pathogenesis of AD [1]. The $A\beta$ peptide results from the cleavage of the amyloid precursor protein (APP) by the β - and γ -secretases and the predominant $A\beta$ peptides found in the brain are 40 ($A\beta_{1-40}$) and 42 ($A\beta_{1-42}$) residues [2].

In the oligomer inhibition assay and ThT fibril inhibition assay, NQTrp completely inhibited $A\beta$ oligomerization and fibrillization. In cultured neural cells, NQTrp dose-dependently inhibited $A\beta$ to assemble into toxic oligomers. In rat PC12 neuronal cell line, NQTrp significantly inhibited the cytotoxic effect of the $A\beta$ oligomers and increased the

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viability of the cells [1].

In a *Drosophila* model of AD, NQTrp prolonged the life span of A β 1-42-expressing flies. A β 1-42-expressing flies with NQTrp displayed dramatic improvement, behaving almost identical to the control classes. The brains of these flies showed a significant reduction in oligomeric species of A β [1].

References:

- [1]. Scherzer-Attali R, Pellarin R, Convertino M, et al. Complete phenotypic recovery of an Alzheimer's disease model by a quinone-tryptophan hybrid aggregation inhibitor. *PLoS One*. 2010 Jun 14;5(6):e111101.
- [2]. Zhang T, Xu W, Mu Y, et al. Atomic and dynamic insights into the beneficial effect of the 1,4-naphthoquinon-2-yl-L-tryptophan inhibitor on Alzheimer's A β 1-42 dimer in terms of aggregation and toxicity. *ACS Chem Neurosci*. 2014 Feb 19;5(2):148-59.

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