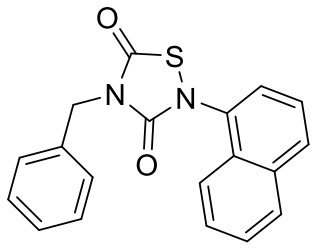
Product data sheet

MedKoo Cat#: 522498 Name: Tideglusib CAS#: 865854-05-3 Chemical Formula: $C_{19}H_{14}N_2O_2S$ Exact Mass: 334.0776 Molecular Weight: 334.393	
Product supplied as:	Powder
Purity (by HPLC):	≥ 98%
Shipping conditions	Ambient temperature
Storage conditions:	Powder: -20°C 3 years; 4°C 2 years.
	In solvent: -80°C 3 months; -20°C 2 weeks.

1. Product description:
Tideglusib, also known as NP031112, is a GSK-3 inhibitor, which is currently under clinical trial for Alzheimer's disease. Tideglusib protects neural stem cells against NMDA receptor overactivation. Tideglusib reduces progression of brain atrophy in progressive supranuclear palsy in a randomized trial. Tideglusib prevents inflammation and neurodegeneration under excitotoxic conditions: potential therapeutic role in brain disorders.

2. CoA, QC data, SDS, and handling instruction
SDS and handling instruction, CoA with copies of QC data (NMR, HPLC and MS analytical spectra) can be downloaded from the product web page under "QC And Documents" section. Note: copies of analytical spectra may not be available if the product is being supplied by MedKoo partners. Whether the product was made by MedKoo or provided by its partners, the quality is 100% guaranteed.

3. Solubility data

Solvent	Max Conc. mg/mL	Max Conc. mM
DMSO	14.11	42.20
DMF	1.0	3.0
DMSO PBS (pH 7.2) (1:1)	0.5	1.50

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	**1 mg**	**5 mg**	**10 mg**
1 mM	2.99 mL	14.95 mL	29.90 mL
5 mM	0.60 mL	2.99 mL	5.98 mL
10 mM	0.30 mL	1.50 mL	2.99 mL
50 mM	0.06 mL	0.30 mL	0.60 mL

5. Molarity Calculator, Reconstitution Calculator, Dilution Calculator
Please refer the product web page under section of "Calculator"

6. Recommended literature which reported protocols for in vitro and in vivo study
In vitro study

1. Armagan G, Keser A, Atalayın Ç, Dagcı T. Tideglusib protects neural stem cells against NMDA receptor overactivation. Pharmacol Rep. 2015 Oct;67(5):823-31. doi: 10.1016/j.pharep.2015.01.007. Epub 2015 Jan 23. PMID: 26398371.
2. Bahmad HF, Chalhoub RM, Harati H, Bou-Gharios J, Assi S, Ballout F, Monzer A, Msheik H, Araji T, Elajami MK, Ghanem P, Chamaa F, Kadara H, Abou-Antoun T, Daoud G, Fares Y, Abou-Kheir W. Tideglusib attenuates growth of neuroblastoma cancer stem/progenitor cells in vitro and in vivo by specifically targeting GSK-3β. Pharmacol Rep. 2021 Feb;73(1):211-226. doi: 10.1007/s43440-020-00162-7. Epub 2020 Oct 8. PMID: 33030673.

In vivo study

1. Wang H, Huang S, Yan K, Fang X, Abussaud A, Martinez A, Sun HS, Feng ZP. Tideglusib, a chemical inhibitor of GSK3β, attenuates hypoxic-ischemic brain injury in neonatal mice. Biochim Biophys Acta. 2016 Oct;1860(10):2076-85. doi: 10.1016/j.bbagen.2016.06.027. Epub 2016 Jul 1. PMID: 27378458.

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2. Li J, Ma S, Chen J, Hu K, Li Y, Zhang Z, Su Z, Woodgett JR, Li M, Huang Q. GSK-3β Contributes to Parkinsonian Dopaminergic Neuron Death: Evidence From Conditional Knockout Mice and Tideglusib. Front Mol Neurosci. 2020 Jun 3;13:81. doi: 10.3389/fnmol.2020.00081. PMID: 32581704; PMCID: PMC7283909.

7. Bioactivity

Biological target: Irreversible GSK-3 inhibitor with IC50s of 5 nM and 60 nM for GSK-3βWT and GSK-3βC199A, respectively

In vitro activity

A luciferase reporter containing βRARE sequence was constructed. This reporter was 9-cis-RA inducible in the presence of RXRα, which could be inhibited by overexpression of GSK-3β (Fig.5A). When Ser78 was mutated into Ala78 (RXRα/S78A), GSK-3β-mediated βRARE inhibition could be reactivated by 9-cis-RA (Fig.5A. 9-cis-RA could also restore βRARE activity via GSK-3β inhibition by tideglusib (Fig.5B). Such phenomenon was reproducible in SMMC7721 and Bel-7402 (Fig. S3B and S3C). An investigation was conducted whether GSK-3β could modulate the heterodimeric capacity of RXRα. As expected, 9-cis-RA could induce RXRα interaction with RARα. When overexpression of GSK-3β, 9-cis-RA-induced RXRα:RARα complex was dismantled (Fig.5C and D). Conversely, the complex could be reassembled when GSK-3β was knocked down by specific siRNA (Fig.5D) or inactivated by tideglusib (Fig. 5E, Fig. S3D and S3E).

Reference: Theranostics. 2020; 10(3): 1230–1244. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6956800/

In vivo activity

Consecutive intravaginal exposure of rabbits to tideglusib for 10 days did not result in significant microscopic abnormalities of vagina tissues. The light microscopy examination revealed intact vaginal epithelium, lack of leukocyte influx and slight vascular congestion in the representative vaginal sections of rabbits receiving gel alone (Fig. 1A) or gel with tideglusib (Fig. 1B). However, ulceration of the epithelial cell layers, vascular congestion, submucosal edema and increased leukocyte infiltration (Fig. 1C) were prominent in N-9 group (a positive control). Accordingly, the total pathological score of tideglusib group (3.4 ± 2.07) was lower than N-9 (7.8 ± 3.82) ($p < .05$) but not significantly different from negative control (1.4 ± 0.82), as shown in Table 1.

Reference: Contracept X. 2019; 1: 100007. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7286178/

Note: The information listed here was extracted from literature. MedKoo has not independently retested and confirmed the accuracy of these methods. Customer should use it just for a reference only.