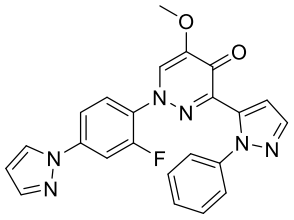
Product data sheet

MedKoo Cat#: 510331 Name: TAK-063 CAS#: 1238697-26-1 Chemical Formula: $C_{23}H_{17}FN_6O_2$ Exact Mass: 428.1397 Molecular Weight: 428.42	
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:

TAK-063, also known as Balipodect., is a highly potent, selective, and orally active phosphodiesterase 10A (PDE10A) inhibitor. TAK-063 is currently being evaluated in clinical trials for the treatment of schizophrenia. Phosphodiesterase 10A (PDE10A) is a cAMP/cGMP phosphodiesterase highly expressed in medium spiny neurons (MSNs) in the striatum. TAK-063 represents a promising drug for the treatment of schizophrenia with potential for superior safety and tolerability profiles.

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	55.0	128.38

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	2.33 mL	11.67 mL	23.34 mL
5 mM	0.47 mL	2.33 mL	4.67 mL
10 mM	0.23 mL	1.17 mL	2.33 mL
50 mM	0.05 mL	0.23 mL	0.47 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. Harada A, Suzuki K, Kamiguchi N, Miyamoto M, Tohyama K, Nakashima K, Taniguchi T, Kimura H. Characterization of binding and inhibitory properties of TAK-063, a novel phosphodiesterase 10A inhibitor. PLoS One. 2015 Mar 27;10(3):e0122197. doi: 10.1371/journal.pone.0122197. PMID: 25815469; PMCID: PMC4376699.

In vivo study

1. Birjandi SZ, Abduljawad N, Nair S, Dehghani M, Suzuki K, Kimura H, Carmichael ST. Phosphodiesterase 10A Inhibition Leads to Brain Region-Specific Recovery Based on Stroke Type. Transl Stroke Res. 2021 Apr;12(2):303-315. doi: 10.1007/s12975-020-00819-8. Epub 2020 May 6. Erratum in: Transl Stroke Res. 2020 Oct 29;: PMID: 32378029; PMCID: PMC7644574.
2. Tohyama K, Sudo M, Morohashi A, Kato S, Takahashi J, Tagawa Y. Pre-clinical Characterization of Absorption, Distribution, Metabolism and Excretion Properties of TAK-063. Basic Clin Pharmacol Toxicol. 2018 Jun;122(6):577-587. doi: 10.1111/bcpt.12964. Epub 2018 Feb 26. PMID: 29345044.

7. Bioactivity

Biological target:

Balipodect (TAK-063) is a PDE10A inhibitor with IC50 of 0.30 nM; >15000-fold selectivity over other PDEs.

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In vitro activity

The half-maximal inhibitory concentration (IC50) value of TAK-063 for PDE10A2 was 0.30 nM, and the minimum IC50 value among the other 10 PDE families was 5500 nM for PDE4D2. Thus, the PDE10A2 selectivity of TAK-063 over other PDE family enzymes was more than 15000-fold. In vitro PDE10A2 selectivity of TAK-063 was further assessed by measuring its inhibitory or stimulatory activities against enzymes (Table 1) and receptors (Table 2) at Ricerca Biosciences (Concord, OH). More than 50% inhibition or stimulation by 10 μM of TAK-063 was considered as a significant response. TAK-063 did not induce a significant response in 91 target molecules, except for PDEs. These results indicate that TAK-063 is a potent and selective inhibitor of human PDE10A in vitro.

Reference: PLoS One. 2015; 10(3): e0122197. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4376699/

In vivo activity

TAK-063 showed significant improvement in overall recovery, with a difference in stroke + 3.0 mg/kg over the 9-week treatment compared with stroke + vehicle controls (Fig. 1a, n = 8–10 for each treatment group, P = 0.0129). TAK-063 did not enhance recovery of motor function in cortical stroke (Fig. 1b, n = 8–11, P = 0.9934). Overall, the results obtained from the Grid-Walking Task indicate that a daily dose of TAK-063 leads to improvement in gait and forelimb motor control in striatal stroke but not in cortical stroke. A separate behavioral test, the Cylinder Task, a measure of forelimb use in exploratory rearing, was also performed for both striatal and cortical stroke mice. The Cylinder test showed great variability between animals in motor performance and across time points. The stroke + 3.0 mg/kg dose of TAK-063 produced a tendency toward recovery of function in the affected forelimb in the striatal stroke over the 9-week treatment compared with stroke + vehicle controls (Supplementary Fig. 2A, P = 0.0558).

Reference: Transl Stroke Res. 2021; 12(2): 303–315. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7644574/