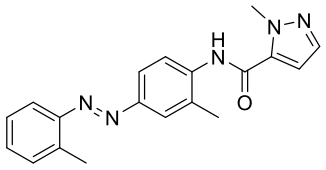
Product data sheet

MedKoo Cat#: 406631 Name: CH223191 CAS#: 301326-22-7 Chemical Formula: $C_{19}H_{19}N_5O$ Exact Mass: 333.15896 Molecular Weight: 333.39	
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:

CH223191 is a potent and specific aryl hydrocarbon receptor (AhR) antagonist. CH223191 can prevent 2,3,7,8-TCDD-induced toxicity by antagonizing the aryl hydrocarbon receptor. 2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) is a widespread environmental pollutant with many toxic effects, including endocrine disruption, reproductive dysfunction, immunotoxicity, liver damage, and cancer. CH223191 potently inhibits TCDD-induced AhR-dependent transcription. In addition, CH-223191 blocked the binding of TCDD to AhR and inhibited TCDD-mediated nuclear translocation and DNA binding of AhR. These inhibitory effects of CH-223191 prevented the expression of cytochrome P450 enzymes, target genes of the AhR. CH-223191, may be a useful agent for the study of AhR-mediated signal transduction and the prevention of TCDD-associated pathology.

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	40.09	120.25
DMF	30.0	89.98
Ethanol	2.14	6.42

4. Stock solution preparation table:

Concentration / Solvent Volume / Mass	1 mg	5 mg	10 mg
1 mM	3.00 mL	15.00 mL	29.99 mL
5 mM	0.60 mL	3.00 mL	6.00 mL
10 mM	0.30 mL	1.50 mL	3.00 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. Kulas J, Tucovic D, Zeljkovic M, Popovic D, Popov Aleksandrov A, Kataranovski M, Mirkov I. Aryl Hydrocarbon Receptor is Involved in the Proinflammatory Cytokine Response to Cadmium. Biomed Environ Sci. 2021 Mar 20;34(3):192-202. doi: 10.3967/bes2021.025. PMID: 33766215.
2. Wang PC, Chen ST, Hong ZK, Li SY, Yang ZS, Quan S, Yang ZM. Tryptophan and kynurenine stimulate human decidualization via activating Aryl hydrocarbon receptor: Short title: Kynurenine action on human decidualization. Reprod Toxicol. 2020 Aug 8;96:282-292. doi: 10.1016/j.reprotox.2020.07.011. Epub ahead of print. PMID: 32781018.

In vivo study

Product data sheet

1. Wang Y, Chen S, Tan J, Gao Y, Yan H, Liu Y, Yi S, Xiao Z, Wu H. Tryptophan in the diet ameliorates motor deficits in a rotenone-induced rat Parkinson's disease model via activating the aromatic hydrocarbon receptor pathway. Brain Behav. 2021 Jun 9. doi: 10.1002/brb3.2226. Epub ahead of print. PMID: 34105899.
2. Marafini I, Di Fusco D, Dinallo V, Franzè E, Stolfi C, Sica G, Monteleone G, Monteleone I. NPD-0414-2 and NPD-0414-24, Two Chemical Entities Designed as Aryl Hydrocarbon Receptor (AhR) Ligands, Inhibit Gut Inflammatory Signals. Front Pharmacol. 2019 Apr 12;10:380. doi: 10.3389/fphar.2019.00380. PMID: 31031628; PMCID: PMC6473199.

7. Bioactivity

Biological target:

CH-223191 is an antagonist of aryl hydrocarbon receptor (AhR) that also inhibits TCDD-mediated nuclear translocation and inhibits TCDD-induced luciferase activity with an IC50 of 0.03 μM.

In vitro activity

To explore the role of AHR during decidualization, tryptophan-treated stromal cells were co-treated with CH223191, a specific AHR inhibitor. The tryptophan induction of IGFBP1 and prolactin was abrogated by CH223191 (Fig. 4A and B). The AHR stimulation by tryptophan was also obviously suppressed by CH223191 (Fig. 4C). Furthermore, tryptophan-induced CYP1A1 and CYP1B1 expression was down-regulated by CH223191 (Figs. 4D and E). These results indicated that tryptophan stimulated IGFBP1 and prolactin expression through activating AHR and its target genes.

Reference: Reprod Toxicol. 2020 Aug 8;96:282-292.
https://www.sciencedirect.com/science/article/pii/S0890623820301854?via%3Dihub

In vivo activity

To confirm that the regulatory effect of NPD-0414-2 and NPD-0414-24 on cytokine expression was strictly dependent on the activation of AhR, anti-CD3/CD28-activated IBD LPMC were treated with Ficz, NPD-0414-2 or NPD-0414-24 in the presence or absence of CH223191, a specific inhibitor of the interaction between AhR and its ligands. Pre-incubation of IBD LPMC with CH223191 fully abolished the regulatory effect of Ficz, NPD-0414-2, and NPD-0414-24 on IFN-γ and IL-22 expression (Figure 3).

Reference: Front Pharmacol. 2019; 10: 380. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6473199/

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.