TMPA

Cat. No.: HY-18555

CAS No.: 1258275-73-8

Molecular Formula: $C_{21}H_{32}O_6$

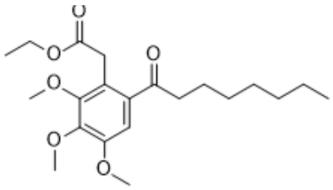
Molecular Weight: 380.48

Target: AMPK; Nuclear Hormone Receptor 4A/NR4A

Pathway: Epigenetics; PI3K/Akt/mTOR; Vitamin D Related/Nuclear Receptor

Storage:

Powder	-20°C	3 years
	4°C	2 years
In solvent	-80°C	2 years
	-20°C	1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : ≥ 100 mg/mL (262.83 mM)

* "≥" means soluble, but saturation unknown.

Preparing Stock Solutions

Solvent / Mass / Concentration	1 mg	5 mg	10 mg
1 mM	2.6283 mL	13.1413 mL	26.2826 mL
5 mM	0.5257 mL	2.6283 mL	5.2565 mL
10 mM	0.2628 mL	1.3141 mL	2.6283 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (6.57 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (6.57 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

TMPA is a high-affinity Nur77 antagonist that binds to Nur77 leading to the release and shuttling of LKB1 in the cytoplasm to activate AMPKα. TMPA effectively lowers blood glucose and attenuates insulin resistance in type II db/db, high-fat diet and streptozotocin-induced diabetic mice. TMPA reduces RICD (restimulation-induced cell death) in human T cells, can also be used in studies of cancer and T-cell apoptosis dysregulation[1][2].

IC_{50} & Target

Nur77/NR4A1

In Vitro

TMPA (5, 10, 20, 40, 80 μM; 6 h or 10 μM; 0.5, 1, 3, 6, 12, 24, 36, 48 h) antagonizes the Nur77-LKB1 interaction in a dose- and time-dependent manner in hepatic LO2 cells[1].

TMPA (10 μM; 6 h) enhances the LKB1-AMPKα interaction but decreases the LKB1-Nur77 interaction under physio logical conditions in Lo2 cells[1].
TMPA binds directly to LBD in specific conformation[1].
TMPA (10, 20 μM; 6 h) induces LKB1 nuclear export to activate AMPKα in Lo2 cells[1].
TMPA (10, 50, 100 μM; 4 h) impairs human T-cell RICD (restimulation-induced cell death)[2].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Cell Viability Assay[2]

Cell Line:	T cells
Concentration:	10, 50, 100 μM
Incubation Time:	4 h
Result:	Significantly reduced T-cell RICD in a dose-dependent manner.

Western Blot Analysis[1]

Cell Line:	Hepatic LO2 cells
Concentration:	10, 20 μM
Incubation Time:	6 h
Result:	Led to an increase of LKB1 phosphorylation at Ser428.

Western Blot Analysis[1]

Cell Line:	Hepatic LO2 cells
Concentration:	5, 10, 20, 40, 80 μM
Incubation Time:	6 h
Result:	Increased the amount of phosphorylation of AmPKα in a dose- and time-dependent manner. Rescued the LKB1-AmPKα interaction by reducing the nur77-lKb1 interaction when at 10 μM.

In Vivo

TMPA (50 mg/kg; i.p.; single daily for 19 days) is capable of lowering blood glucose and improving glucose tolerance in type II diabetic mice[1].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Male C57BL/KsJ-Lepr^{db}/Lepr^{db} (db/db) mice (10-week-old; type II diabetic model)[1].
Dosage:	50 mg/kg
Administration:	Intraperitoneal injection; single daily for 19 days.
Result:	Significantly reduced blood glucose at day 7 and persisted during the remainder of the test. Increased the amount of phosphorylated AMPKα in the liver of mice.

CUSTOMER VALIDATION

- Diabetes Metab Syndr Obes. 2021 Oct 2;14:4165-4177.

See more customer validations on www.MedChemExpress.com

REFERENCES

[1]. Zhan YY, et al. The orphan nuclear receptor Nur77 regulates LKB1 localization and activates AMPK. Nat Chem Biol. 2012 Nov;8(11):897-904.

[2]. Recher, et al. Modulation of T-cell apoptosis by small molecule compounds targeting the nuclear orphan receptor Nur 77. (2018).

Tel: 609-228-6898 Fax: 609-228-5909 E-mail: tech@MedChemExpress.com

Address: 1 Deer Park Dr, Suite Q, Monmouth Junction, NJ 08852, USA