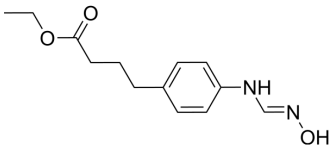
CYP4Z1-IN-1

Cat. No.:	HY-152159
CAS No.:	2760611-38-7
Molecular Formula:	$C_{13}H_{18}N_2O_3$
Molecular Weight:	250.29
Target:	Cytochrome P450
Pathway:	Metabolic Enzyme/Protease
Storage:	Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

CYP4Z1-IN-1 (compound 7c) is a potent CYP4Z1 inhibitor, with an IC_{50} of 41.8 nM. CYP4Z1-IN-1 decreases the expression of breast CSCs stemness markers, spheroid formation, and metastatic ability as well as tumor-initiation capability in a concentration-dependent manner in vitro and in vivo[1].

IC_{50} & Target

CYP4Z1 41.8 ± 1.4 nM (IC_{50})	CYP4F11 291.3 ± 46 nM (IC_{50})	CYP4F12 1598.3 ± 5 nM (IC_{50})	CYP2D6 >10 000 nM (IC_{50})
CYP2C9 >10 000 nM (IC_{50})	CYP3A4 >10 000 nM (IC_{50})		

In Vitro

CYP4Z1-IN-1 (compound 7c) shows antiproliferative activity against breast CSCs (cancer stem cells), with an IC_{50} of 483 ± 2.5 nM[1].

CYP4Z1-IN-1 (0.8-51.2 μM, 24 h) suppresses the expression of stemness markers (P-gp, Oct3/4, Nanog, ALDH1A1, and Sox2) in breast cancer cells[1].

CYP4Z1-IN-1 (0.8-51.2 μM, 24-48 h) attenuates the migration and invasion ability of breast cancer cells[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Western Blot Analysis[1]

Cell Line:	MCF-7 and MDA-MB-231 cells
Concentration:	0.8 μM, 3.2 μM, 12.8 μM, 51.2 μM
Incubation Time:	24 h
Result:	Significantly suppressed the protein expression of stemness markers (P-gp, Oct3/4, Nanog, ALDH1A1, and Sox2) in MCF-7 cells in a concentration-dependent manner.

In Vivo

CYP4Z1-IN-1 (compound 7c) (2000 mg/kg, orally, for 7 days) shows no evident toxicity and body weight loss in mice[1].

CYP4Z1-IN-1 (MCF-7 and MDA-MB-231 cells (12.8 μM, 72 h) implanted in the inguinal mammary gland of mice subcutaneously) blocks the tumor-initiating ability of breast cancer cells[1].

MCE has not independently confirmed the accuracy of these methods. They are for reference only.

Animal Model:	Mice[1]
Dosage:	2000 mg/kg
Administration:	orally, for 7 days
Result:	Showed that compound 7c was rather safe; no evident toxicity and body weight loss were observed.

Animal Model:	BALB/c-nude mice (3-4 week old, female)[1]
Dosage:	12.8 μM
Administration:	MCF-7 and MDA-MB-231 cells were pre-treated with 7c (12.8 μM) for 72 h and were then implanted in the inguinal mammary gland of mice subcutaneously
Result:	Blocked the tumor-initiating ability of breast cancer cells.

REFERENCES

[1]. Yuan Y, et al. Identification of a Novel Potent CYP4Z1 Inhibitor Attenuating the Stemness of Breast Cancer Cells through Lead Optimization. J Med Chem. 2022 Dec 8;65(23):15749-15769.

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