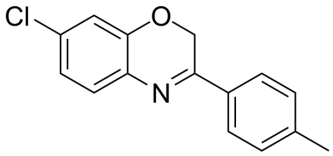
AR7

Cat. No.:	HY-101106
CAS No.:	80306-38-3
Molecular Formula:	$C_{15}H_{12}ClNO$
Molecular Weight:	257.71
Target:	RAR/RXR
Pathway:	Metabolic Enzyme/Protease
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 6 months -20°C 1 month



SOLVENT & SOLUBILITY

In Vitro

DMSO : 25 mg/mL (97.01 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	3.8803 mL	19.4017 mL	38.8033 mL
	5 mM	0.7761 mL	3.8803 mL	7.7607 mL
	10 mM	0.3880 mL	1.9402 mL	3.8803 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 (9.70 mM); Suspended solution; Need ultrasonic
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (9.70 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (9.70 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

AR7 is an atypical RARA/RARα (retinoic acid receptor, alpha) antagonist. AR7 specifically activates chaperone-mediated-autophagy (CMA) activity without affecting macroautophagy[1].

IC_{50} & Target

RARα

In Vitro

Treatment with RARA antagonist, AR7 (20 μM; for 16 h), increased lysosomal activity in WT and $LRRK2^{R1441G}$ KI mutant MEFs [1].

AR7 (10, 20, 30 uM; 12, 24 hours) has no effect on macroautophagy in NIH 3T3 cells[2].
Chaperone-mediated autophagy (CMA) contributes to cellular quality control and the cellular response to stress through the selective degradation of cytosolic proteins in lysosomes. Decrease in CMA activity occurs in aging and in age-related disorders. Signaling through the retinoic acid receptor alpha (RARα) inhibits CMA. AR7 significantly activates CMA activity in mouse fibroblasts. A marked increase in CMA-activating potency is found when AR7 and GR1 are combined, supporting their cooperative effect. Treatment with the transcriptional repressor Actinomycin D partially reduces the stimulatory effect of AR7 on CMA, consistent with transcriptional changes contributing to the upregulation of CMA[3].
MCE has not independently confirmed the accuracy of these methods. They are for reference only.

CUSTOMER VALIDATION

- Biochem Biophys Res Commun. 2020 Jul 23;528(2):276-284.
- Research Square Preprint. 2021 Jul.

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REFERENCES

[1]. Anguiano J, et al. Chemical modulation of chaperone-mediated autophagy by retinoic acid derivatives. Nat Chem Biol. 2013 Jun;9(6):374-82.

[2]. Philip Wing-Lok Ho, et al. Age-dependent accumulation of oligomeric SNCA/α-synuclein from impaired degradation in mutant LRRK2 knockin mouse model of Parkinson disease: role for therapeutic activation of chaperone-mediated autophagy (CMA). Autophagy. 2020 Feb;16(2):347-370.

[3]. Mathieu Bourdenx, et al. Chaperone-mediated autophagy prevents collapse of the neuronal metastable proteome. Cell. 2021 May 13;184(10):2696-2714.e25.

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