

Product Data Sheet

Product Name: AP 18
Cat. No.: GC18020

Chemical Properties

Cas. No. 55224-94-7

Chemical Name (2E,3Z)-4-(4-chlorophenyl)-3-methylbut-3-en-2-one oxime

SMILES C/C=C/C(C=C1)/C=C(C)\C(C)=N\O

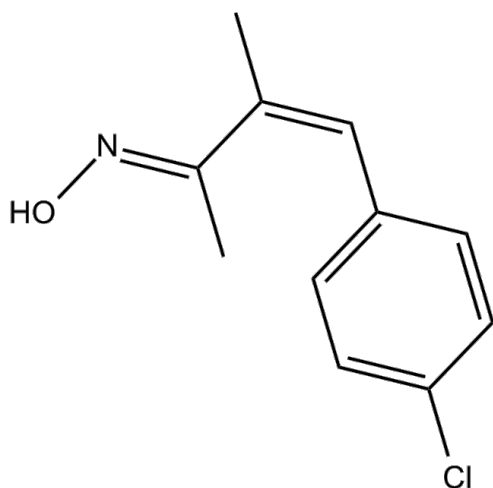
Formula $C_{11}H_{12}ClNO$ M.Wt 209.67

Solubility 20 mg/ml in enathol; 30 mg/ml in DMSO Storage Store at -20°C, protect from light

General tips For obtaining a higher solubility, please warm the tube at 37 °C and shake it in the ultrasonic bath for a while. Stock solution can be stored below -20°C for several months.

Shipping Condition Evaluation sample solution : ship with blue ice All other available size: ship with RT, or blue ice upon request.

Structure



Protocol

Cell experiment [1]:

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Cell lines	LU-NB-3 cells
Preparation Method	LU-NB-3 cells were cultured in DMEM medium, supplemented with 10% fetal bovine serum, 1% penicillin-streptomycin, 2% B27 without vitamin A, epidermal growth factor (20ng/ml), and fibroblast growth factor (40ng/ml) at 37°C in an incubator with 5% CO ₂ . In 96-well plates, LU-NB-3 cells were plated in triplicate and subjected to 24h treatments with different concentrations of AP 18 (0, 1, 5, 10, and 100μM). After 48h, and cell viability was tested.
Reaction Conditions	0, 1, 5, 10, and 100μM; 48h
Applications	AP 18 treatment markedly promoted cell death of LU-NB-3 cells in a dose-dependent manner.
Animal experiment [2]:	
Animal models	C57Bl/6J mice
Preparation Method	C57Bl/6J mice (8 weeks old) were housed in SPF conditions with an automatic 12h/12h light-dark cycle at a constant temperature (20-25°C). LPS (10μg in 25μl saline) was injected subcutaneously into the plantar surface of one of the hind paws using a 50μl syringe fitted with a 26-gauge×3/8 inch intradermal needle. AP 18 was made up in 1% DMSO/0.5% Tween 80/saline. Pretreatment with AP 18 (3mg/kg; i.p.; 30min before LPS). The nociceptive effect of local LPS was measured.
Dosage form	3mg/kg; once; i.p.

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Applications	AP 18 treatment prevented the development of the LPS-induced hyperalgesia in C57Bl/6 mice.
References:[1] Seger A, Adamič D, Olmos E M, et al. Evaluation of TRPA1 as a Therapeutic Target in MYCN-Amplified Neuroblastoma[J]. Pediatric Blood & Cancer, 2025, 72(9): e31875.[2] Andersson D A, Gentry C, Bevan S. TRPA1 has a key role in the somatic pro-nociceptive actions of hydrogen sulfide[J]. PLoS ONE, 2012, 7(10): e46917.	

Background

AP 18 is a potent and selective TRPA1 inhibitor, blocking activation of TRPA1 by 50μM Cinnamaldehyde with an IC₅₀ value of 4.5μM for mouse TRPA1^[1]. AP 18 attenuates 30μM allyl isothiocyanate (AITC)-induced divalent cation Yo-Pro uptake in HEK-293F cells expressing rat TRPA1, with an IC₅₀ value of 10.3μM^[2]. AP 18 targets TRPA-1 to inhibit Ca²⁺ influx mediated by oxidative stress, prevent the Ca²⁺-dependent anti-apoptotic pathway, downregulate the expression of N-cadherin and vimentin, and upregulate the expression of E-cadherin^[3]. AP 18 has been used to inhibit cholinergic twitch responses evoked by electrical field stimulation of cholinergic nerves as well as contractions in response to acetylcholine and histamine in the guinea pig small intestine^[4].

In vitro, AP 18 treatment (100μM) for 48 hours reduced the viability of LU-NB-3 cells and altered the morphology, promoting the cells to transform into flat adherent structures with dendritic protrusions^[5]. Incubation of AP 18 (10μM) and Resveratrol (50μM) for 24h decreased the hypoxia-mediated upregulation of apoptotic (caspase -3, -8, and -9) and oxidative (ROS and lipid peroxidation) concentrations, and mitigated mitochondrial dysfunction in SH-SY5Y cells^[6]. The 12-day treatment with 1μM AP 18 weakened the inhibitory effect of 1μM trans-Pellitorine on lipid accumulation in 3T3-L1 cells and restored the expression levels of the PPARγ gene and protein^[7].

In vivo, AP 18 treatment via intraperitoneal administration at a dose of 3mg/kg 30min before intraplantar lipopolysaccharide (LPS) injection completely prevented development of the LPS-induced hyperalgesia in C57Bl/6 mice^[8]. In CD1 mice, intra-articular injection of AP 18 (25nmol/10μl) at 22 hours after Freund's complete adjuvant (CFA) injection alleviated CFA-induced mechanical hyperalgesia^[9].

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- [1] Petrus M, Peier A M, Bandell M, et al. A role of TRPA1 in mechanical hyperalgesia is revealed by pharmacological inhibition[J]. Molecular pain, 2007, 3: 1744-8069-3-40.
- [2] Chen J, Kim D, Bianchi B R, et al. Pore dilation occurs in TRPA1 but not in TRPM8 channels[J]. Molecular pain, 2009, 5: 1744-8069-5-3.
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- [4] Bartho L, Sándor Z, Kelemen D, et al. Smooth muscle-depressant activity of AP-18, a putative TRPA1 antagonist in the guinea pig intestine[J]. Pharmacology, 2014, 94(3-4): 131-134.
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- [7] Lieder B, Zaunschirm M, Holik A K, et al. The alkamide trans-pellitorine targets PPAR γ via TRPV1 and TRPA1 to reduce lipid accumulation in developing 3T3-L1 adipocytes[J]. Frontiers in pharmacology, 2017, 8: 316.
- [8] Andersson D A, Gentry C, Bevan S. TRPA1 has a key role in the somatic pro-nociceptive actions of hydrogen sulfide[J]. PLoS ONE, 2012, 7(10): e46917.
- [9] Fernandes E S, Russell F A, Spina D, et al. A distinct role for transient receptor potential ankyrin 1, in addition to transient receptor potential vanilloid 1, in tumor necrosis factor α -induced inflammatory hyperalgesia and Freund's complete adjuvant-induced monoarthritis[J]. Arthritis & Rheumatism, 2011, 63(3): 819-829.

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