# L-Kynurenine

**Cat. No.:** HY-104026

**CAS No.:** 2922-83-0

**Molecular Formula:** $C_{10}H_{12}N_2O_3$

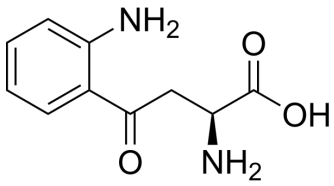
**Molecular Weight:** 208.21

**Target:** Aryl Hydrocarbon Receptor; Endogenous Metabolite

**Pathway:** Immunology/Inflammation; 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**

$H_2O$ : 20 mg/mL (96.06 mM; Need ultrasonic)

DMSO : 12.5 mg/mL (60.04 mM; ultrasonic and warming and heat to 60°C)

**Preparing Stock Solutions**

| Solvent / Mass / Concentration | 1 mg | 5 mg | 10 mg |
|---|---|---|---|
| 1 mM | 4.8028 mL | 24.0142 mL | 48.0284 mL |
| 5 mM | 0.9606 mL | 4.8028 mL | 9.6057 mL |
| 10 mM | 0.4803 mL | 2.4014 mL | 4.8028 mL |

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

**In Vivo**

1. Add each solvent one by one: PBS
   Solubility: 7.14 mg/mL (34.29 mM); Clear solution; Need ultrasonic and warming and heat to 60°C
2. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.08 mg/mL (9.99 mM); Clear solution
3. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 0.83 mg/mL (3.99 mM); Clear solution
4. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: ≥ 0.83 mg/mL (3.99 mM); Clear solution

## BIOLOGICAL ACTIVITY

**Description** L-Kynurenine is a metabolite of the amino acid L-tryptophan. L-Kynurenine is an aryl hydrocarbon receptor agonist.

**$IC_{50}$ & Target** Human Endogenous Metabolite

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|---|---|
| **In Vitro** | Kynurenine and its further breakdown products carry out diverse biological functions, including dilating blood vessels during inflammation and regulating the immune response. Some cancers increase kynurenine production, which increases tumor growth. L-kynurenine (Kyn) is an aryl hydrocarbon receptor (AHR) agonist that activates AHR-directed, naive T cell polarization to the anti-inflammatory Treg phenotype. Kynurenine activates AHR signaling at physiological concentrations in H1L7.5c3 cells and acts as an AHR agonist after a 24-hr exposure by inducing the AHR-regulated luciferase gene in H1L7.5c3 mouse hepatocyte cells[1].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **In Vivo** | Kynurenine dilates arteries from rats as well as humans via Kv7 channels in the vascular smooth muscle. In rats, this tryptophan metabolite causes hypotension, which is partly counteracted by Kv7 channel inhibition[2].<br>L-kynurenine administered 1 h before the hypoxia-ischemia shows a dose-dependent significant neuroprotective effect, with complete protection at a dose of 300 mg/kg. The induction of c-fos immunoreactivity in cerebral cortex is also blocked by this dose of L-kynurenine[3].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## PROTOCOL

| | |
|---|---|
| **Cell Assay [1]** | Luciferase assays are carried out using the H1L7.5c3 cells. At the indicated times (0.5, 2, 4, 6, 12, 18, 24 h) and concentrations (0.1, 1, 10, 100 μM) of exposures to Kynurenine, cells are removed from incubation and allowed to equilibrate to room temperature for 15min. After equilibration, the medium is removed and the cells are washed twice with at room temperature with DPBS. The cells are lysed with 20 μL/well 1× Passive Lysis Buffer and shaken for 20min at room temperature. Luciferase activity is recorded using an Luminometer Microplate Reader[1].<br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |
| **Animal Administration [3]** | Rats[3]<br><br>The effects of increasing doses of L-kynurenine with or without probenecid on concentrations of kynurenic acid in cerebral cortex are examined in 7-day-old rats. Six animals are examined in each group. Animals are treated with L-kynurenine at doses of 100, 200, 300, and 400 mg/kg or kynurenine, 200 mg/kg with probenecid, 50 mg/kg. Animals are killed at 1 h, the brains promptly removed, and the cerebral cortex is dissected and placed in 0.5 mL of chilled 0. 1 M HCl. Kynurenic acid measurements are made by high-performance liquid chromatography with fluorescence detection. Protein measurements are made using a fluorometric assay[3].<br><br>MCE has not independently confirmed the accuracy of these methods. They are for reference only. |

## CUSTOMER VALIDATION

- ACS Nano. 2020 Nov 25.
- Nat Commun. 2022 Sep 26;13(1):5644.
- J Exp Clin Cancer Res. 2023 Mar 1;42(1):52.
- J Anim Sci Biotechnol. 2023 Aug 5;14(1):111.
- PLoS Pathog. 2020 Jul 17;16(7):e1008664.

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## REFERENCES

[1]. Moyer BJ, et al. Inhibition of the aryl hydrocarbon receptor prevents Western diet-induced obesity. Model for AHR activation by kynurenine via oxidized-LDL, TLR2/4,

TGFβ, and IDO1. Toxicol Appl Pharmacol. 2016 Jun 1;300:13-24.

[2]. Sakakibara K, et al. Kynurenine causes vasodilation and hypotension induced by activation of KCNQ-encoded voltage-dependent K(+) channels. J Pharmacol Sci. 2015 Sep;129(1):31-7.

[3]. Nozaki K, et al. Neuroprotective effects of L-kynurenine on hypoxia-ischemia and NMDA lesions in neonatal rats. J Cereb Blood Flow Metab. 1992 May;12(3):400-7.



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