L-Kynurenine

AhR agonist

Catalog codes: tlrl-kyn, tlrl-kyn-5

https://www.invivogen.com/kynurenine

For research use only

Version 21K03-MM

PRODUCT INFORMATION

Contents

L-Kynurenine is available in two pack sizes:

- **tlrl-kyn:** 1 x 10 mg
- **tlrl-kyn-5:** 5 x 10 mg

Storage and stability

- L-Kynurenine is shipped at room temperature. Store at 15-25 °C.
- Upon resuspension, store at 15-25 °C. Resuspended product is stable for 6 months when properly stored. **DO NOT FREEZE.**
- We recommend to protect this product from light.

Quality control

- Purity ≥ 95% (UHPLC)
- The absence of bacterial contamination (e.g. lipoproteins and endotoxins) has been confirmed using HEK-Blue™ TLR2 and HEK-Blue™ TLR4 cells.
- The biological activity has been validated using cellular assays.

BACKGROUND

L-Kynurenine (β-Anthraniloyl-L-Alanine) is an endogenous agonist for the cytosolic aryl hydrocarbon receptor (AhR)[1]. L-Kynurenine results from the catabolic conversion of tryptophan (Trp) by two enzymes, the indoleamine-2,3-dioxygenase (IDO1) and the tryptophan-2,3-dioxygenase (TDO2). L-Kynurenine is the first byproduct of Trp metabolism generated via the enzymatic "kynurenine pathway", which produces other kynunerine derivatives[2]. L-Kynurenine is implicated in the production of TGF-β and expansion of regulatory T cells through the AhR-Src-IDO1 pathway[1]. An increase in the kynurenine/Trp ratio in tumors has been shown to correlate with cancer progression, corroborating immuno-suppressive functions for this AhR agonist[2]. Yet, L-Kynurenine's mode of action on AhR is still unclear. Indeed, L-Kynurenine could be a low-affinity AhR pro-ligand that is slowly converted in high-affinity compounds acting as AhR agonists at subnanomolar concentrations. This conversion occurs independently of enzymes, when fresh crystalline L-Kynurenine is resuspended as a solution, and gives rise to trace-amounts of derivatives named TEACOPs (trace-extended aromatic condensation products)[3].

1. Bessede A. *et al.*, 2014. Aryl hydrocarbon receptor control of a disease tolerance defence pathway. Nature. 511:184-90. **2. Hubbard T.D. *et al.*, 2015.** Indole and tryptophan metabolism: endogenous and dietary routes to Ah receptor activation. Drug Metab. Dispos. 43:1522-35. **3. Seok, S.H. *et al.*, 2018.** Trace derivatives of kynurenine potently activate the aryl hydrocarbon receptor (AHR). J. Biol. Chem. 293:1994-2005.

PRODUCT DESCRIPTION

As stated above, L-Kynurenine may be the pro-ligand for AhR that is converted into trace-amounts derivatives with high-affinity for AhR. To avoid weighing and ensure the most accurate manipulation of this product, L-Kynurenine is available as 10 mg units. Each lot of L-Kynurenine is functionally tested in cellular assays using our HepG2-Lucia™ AhR and HT29-Lucia™ AhR reporter cells.

CHEMICAL PROPERTIES

CAS number: 2922-83-0

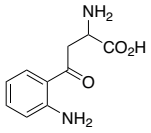
Synonyms: β-Anthraniloyl-L-Alanine, L-2-Amino-4-(2-aminophenyl)-4-oxobutanoic acid

Solubility: 20 mg/ml (96 mM) in DMSO

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

Molecular weight: 208.22 g/mol

Structure:



METHODS

Preparation of 5 mg/ml (24 mM) stock solution

1. Add 1 ml of DMSO to 10 mg of L-Kynurenine. Mix by vortexing and transfer into a new tube.
2. Rinse the commercial vial with 1 ml of DMSO and add to the previously resuspended product. Mix by vortexing. The final volume in the new tube is 2 ml.
3. Use immediately or store at 15-25 °C until required. **DO NOT FREEZE.**

Note: L-Kynurenine's potency is very low when just resuspended. Potency increases days post-resuspension.

Working concentration range: 10 µg/ml (48 µM) to 100 µg/ml (480 µM) for cell culture assays

AhR activation assay

Described below is a protocol to study AhR activation in HepG2-Lucia™ AhR cells which derive from the human HepG2 hepatoma cell line. These cells report AhR activation through the monitoring of human Cyp1a1-induced Lucia luciferase activity. For more information, visit https://www.invivogen.com/hepg2-lucia-ahr.

1. Prepare a 5-fold dilution of L-Kynurenine stock solution **in DMSO** to obtain a **1 mg/ml work solution**.
2. Prepare further dilutions using sterile endotoxin-free water.
3. Add 20 µl of L-Kynurenine at 33 µg/ml (final concentration) per well of a flat-bottom 96-well plate.

Note: we recommend to include a control dilution of DMSO in your assay.

4. Add 180 µl of cell suspension (~20,000 cells) per well.
5. Incubate the plate at 37 °C in a 5% CO_2 incubator for 18-24 hours.
6. Monitor Lucia luciferase reporter protein production using a luciferase detection reagent, such as QUANTI-Luc™.

RELATED PRODUCTS

Product	Description	Cat. Code
CH-223191	AhR inhibitor	inh-ch22
FICZ	AhR ligand	tlrl-ficz
HepG2-Lucia™ AhR Cells	AhR hepatoma reporter cells	hpgl-ahr
HT29-Lucia™ AhR Cells	AhR colon cancer reporter cells	ht2l-ahr
ITE	AhR ligand	tlrl-ite
QUANTI-Luc™	Lucia detection medium	rep-qlc1

TECHNICAL SUPPORT
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