Argininosuccinic acid

Cat. No.: HY-113149

CAS No.: 2387-71-5

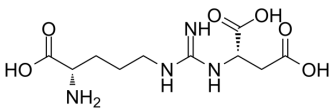
Molecular Formula: $C_{10}H_{18}N_4O_6$

Molecular Weight: 290.27

Target: Endogenous Metabolite; Reactive Oxygen Species

Pathway: Metabolic Enzyme/Protease; Immunology/Inflammation; NF-κB

Storage: Please store the product under the recommended conditions in the Certificate of Analysis.



BIOLOGICAL ACTIVITY

Description

Argininosuccinic acid participates in the fourth step of the urea cycle, with being cleaved to arginine and fumaric acid by argininosuccinic acid lyase (ASL). Argininosuccinic acid reduces reduced glutathione (GSH) level, and increases the production of reactive oxygen species in cerebral cortex and striatum. Argininosuccinic acid causes lipid peroxidation and protein oxidation, and induces oxidative stress in the developing rat brain[1][2].

In Vitro

Argininosuccinic acid (250-1000 μM; 1 h) significantly increases MDA levels and decreases sulfhydryl and carbonyl formation (protein oxidation) in cerebral cortex[1].

Argininosuccinic acid (250-1000 μM; 1 h) decreases reduced glutathione (GSH) concentrations in cerebral cortex of 30-day-old rats[1].

Argininosuccinic acid (500 μM; 1 h) increases 2',7'-dichlorofluorescein (DCFH) oxidation in cerebral cortex of 30-day-old rats [1].

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

In Vivo

Argininosuccinic acid (2 μM for 2 μL; ICV; single dose) significantly induces oxidative stress in 30-day-old rats[1].

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Animal Model:	30-day-old rats with two small holes drilled in the skull[1]
Dosage:	2 μL of a 1.0 M concentration (2 μmol in 2 μL)
Administration:	Injection; euthanized 2 h after treatment
Result:	Significantly induced lipid oxidation (MDA levels) and protein oxidation (carbonyl formation), increased ROS and RNS generation (DCFH oxidation). Significantly decreased GSH concentrations.

REFERENCES

[1]. Nagamani SCS, et al. GeneReviews® [Internet]. Seattle (WA): University of Washington, Seattle; 1993–2023.

[2]. Seminotti B, et al. Free Radical Scavengers Prevent Argininosuccinic Acid-Induced Oxidative Stress in the Brain of Developing Rats: a New Adjuvant Therapy for Argininosuccinate Lyase Deficiency? Mol Neurobiol. 2020 Feb;57(2):1233-1244.

Caution: Product has not been fully validated for medical applications. For research use only.

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