Product Data Sheet

Product Name: H-D-Arg-OH
Cat. No.: GA10907

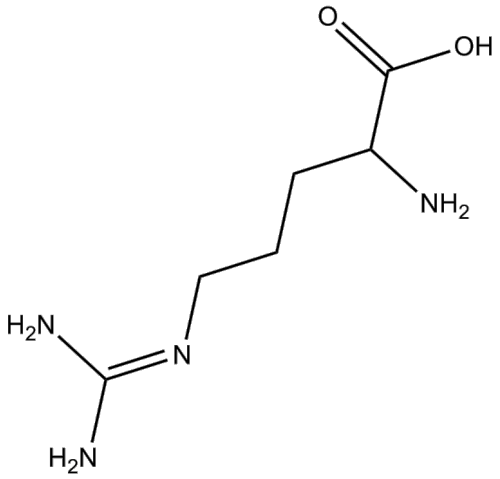
Chemical Properties

Cas. No.	157-06-2		
Chemical Name	(2R)-2-amino-5-(diaminomethylideneamino)pentanoic acid		
SMILES	C(CC(C(=O)O)N)CN=C(N)N		
Formula	$C_6H_{14}N_4O_2$	M.Wt	174.2
Solubility	H_2O : 25 mg/mL (143.51 mM; Need ultrasonic)	Storage	Store at RT
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.		

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA

Product Data Sheet

Structure



Protocol

Cell experiment [1]:

Cell lines	Pituitary GH3 cells (rat pituitary tumor cell line) and Bovine Aortic Endothelial Cells (BAEC)
Preparation Method	GH3 cells were maintained in F10 medium supplemented with 10% FBS and 15% horse serum. BAEC were maintained in DMEM supplemented with 10% FBS. Cells were treated with H-D-Arg-OH or H-D-Arg-OH galactosyl derivative (D-ArgGal) at concentrations of 3-30mM for 30 minutes to 4 hours in normal Krebs solution at 37°C, 5% CO_2.
Reaction Conditions	3-30mM; 30min-4h

Product Data Sheet

Applications	H-D-Arg-OH significantly increased intracellular DAF-2 monitored NO and nitrite levels in a dose-dependent manner in GH3 cells.

Animal experiment [2]:

Animal models	Male Sprague-Dawley rats (9 weeks old)
Preparation Method	Rats were orally administered L-arginine (L-Arg) or H-D-Arg-OH at a dose of 1000mg/kg/day in drinking water for 16 weeks. The control group received plain drinking water. Animals were sacrificed after the treatment period for analysis of plasma, organs, and tissues.
Dosage form	1000mg/kg/day; Oral (in drinking water); 16 weeks.
Applications	Oral H-D-Arg-OH significantly increased endothelial nitric oxide synthase (eNOS) protein expression in the aorta and kidney compared to the control group. Oral H-D-Arg-OH significantly increased arginase I protein expression in the liver. H-D-Arg-OH significantly increased urea levels in the skeletal muscle and hydroxyproline levels in the kidney and brain.

References:

[1] Melisi D, Secondo A, Montoro P, et al. Galactosyl derivatives of L-arginine and D-arginine: synthesis, stability, cell permeation, and nitric oxide production in pituitary GH3 cells. J Med Chem. 2006 Aug 10;49(16):4826-33.
[2] Kim DR, Martin S, Desai K. The effects of a comparatively higher dose of 1000 mg/kg/d of oral L- or D-arginine on the L-arginine metabolic pathways in male Sprague-Dawley rats. PLoS One. 2023 Aug 1;18(8):e0289476.

Background

Product Data Sheet

H-D-Arg-OH is a D-configuration non-natural amino acid with important applications in drug development and protein engineering[1-2]. H-D-Arg-OH is commonly used in studies related to the L-arginine/nitric oxide pathway and has shown potential in inhibiting the proliferation of certain cancer cells[3-4].

In vitro, pretreatment of pituitary GH3 cells with H-D-Arg-OH (10mM) for 15–240 minutes, followed by incubation in normal Krebs solution, significantly increased intracellular D-arginine concentration and nitric oxide (NO) production, while also elevating extracellular nitrite levels[5]. Combined pretreatment of Actinomyces viscosus biofilms with 8mM H-D-Arg-OH and 0.01% α-amylase (Amy) for 30 minutes significantly enhanced the dissociation effect of α-amylase on the biofilm, completely hydrolyzing extracellular polysaccharides while maintaining safety toward MC3T3-E1 pre-osteoblasts[6].

In vivo, oral administration of H-D-Arg-OH (1000mg/kg/day) via drinking water to 9-week-old male Sprague-Dawley rats for 16 weeks significantly increased endothelial nitric oxide synthase (eNOS) protein expression in the kidneys and aorta, while also raising urea levels in skeletal muscle[7]. After oral administration of H-D-Arg-OH (6mmol/10mL DW/kg) to ICR mice for 30, 60, and 90 minutes, a significant increase in H-D-Arg-OH levels was observed in both plasma and brain tissues[8].

References:
[1] Navarro E, Alonso SJ, Martín FA, et al. Toxicological and pharmacological effects of D-arginine. Basic Clin Pharmacol Toxicol. 2005 Sep;97(3):149-54.
[2] Kawabata A, Nishimura Y, Takagi H. L-leucyl-L-arginine, naltrindole and D-arginine block antinociception elicited by L-arginine in mice with carrageenin-induced hyperalgesia. Br J Pharmacol. 1992 Dec;107(4):1096-101.
[3] Hu B, Feng X, Wang L, et al. 5-BDBD ameliorates an OVA-induced allergic asthma by the reduction of Th2 cytokines production. Iran J Basic Med Sci. 2018 Apr;21(4):364-369.
[4] Wang L, Wu J, Wang B, et al. d-arginine-functionalized carbon dots with enhanced near-infrared emission and prolonged metabolism time for tumor fluorescent-guided photothermal therapy. J Colloid Interface Sci. 2025 Jan 15;678(Pt C):575-582.
[5] Melisi D, Secondo A, Montoro P, et al. Galactosyl derivatives of L-arginine and D-arginine: synthesis, stability, cell permeation, and nitric oxide production in pituitary GH3 cells. J Med Chem. 2006 Aug 10;49(16):4826-33.
[6] Li B, Cai Q, Wang Z, et al. D-arginine Enhances the Effect of Alpha-Amylase on Disassembling

Product Data Sheet

Actinomyces viscosus Biofilm. Front Bioeng Biotechnol. 2022 Mar 3;10:864012.
[7] Kim DR, Martin S, Desai K. The effects of a comparatively higher dose of 1000 mg/kg/d of oral L- or D-arginine on the L-arginine metabolic pathways in male Sprague-Dawley rats. PLoS One. 2023 Aug 1;18(8):e0289476.
[8] Aso K, Nishigawa T, Nagamachi S, et al. Orally administrated D-arginine exhibits higher enrichment in the brain and milk than L-arginine in ICR mice. J Vet Med Sci. 2020 Mar 5;82(3):307-313.

Caution: Product has not been fully validated for medical applications. For research use only.
Tel: (909) 407-4943 Fax: (626) 353-8530 E-mail: tech@glpbio.com
Address: 10292 Central Ave. #205, Montclair, CA, USA