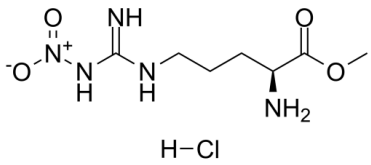
Data Sheet

Product Name:	L-NAME (hydrochloride)
Cat. No.:	CS-5077
CAS No.:	51298-62-5
Molecular Formula:	C7H16ClN5O4
Molecular Weight:	269.69
Target:	NO Synthase
Pathway:	Immunology/Inflammation
Solubility:	H2O : ≥ 32 mg/mL (118.65 mM); DMSO : 100 mg/mL (370.80 mM; Need ultrasonic); H2O : 125 mg/mL (463.50 mM; Need ultrasonic)



BIOLOGICAL ACTIVITY:

L-NAME hydrochloride inhibits **NOS** with an **IC_{50}** of 70 μM. L-NAME is a precursor to **NOS** inhibitor L-NOARG which has an **IC_{50}** value of 1.4 μM. IC50 & Target: IC50: 70 μM (NOS)[1] **In Vitro:** L-arginine analogues are widely used inhibitors of nitric oxide synthase (NOS) activity, with N^{w}-nitro-L-arginine methyl ester (L-NAME) being at the head[2]. Freshly dissolved L-NAME is a 50 fold less potent inhibitor of purified brain NOS (mean IC_{50}= 70 μM) than L-NOARG (IC_{50}= 1.4 μM), but the apparent inhibitory potency of L-NAME approached that of L-NOARG upon prolonged incubation at neutral or alkaline pH. HPLC analyses reveal that NOS inhibition by L-NAME closely correlated with hydrolysis of the drug to L-NOARG[1]. **In Vivo:** L-NAME infusion significantly decreases NKT-leukocyte level, tumor-necrosis factor (TNF)-alpha production by T-splenocytes and macrophages, and interferon-gamma production by T-leukocytes, monocytes, and T-splenocytes, as well as increased interleukin-6 production by T-leukocytes and monocytes and nitrate/nitrite production by T-leukocytes[3]. There is increasing evidence that nitric oxide may be involved in learning and memory. l-NAME produces a task-dependent impairment of fear extinction, and implies that nitric oxide signaling is involved in memory process of certain fear extinction tasks[4]. Chronic L-NAME administration induces cardiac hypertrophy in rodent models. Six weeks L-NAME administration induces significant cardiac hypertrophy compared to control hearts[5].

PROTOCOL (Extracted from published papers and Only for reference)

Animal Administration: [3][5]Rat: The purpose is to investigate dose effects of chronically infused NOS inhibitor, LNAME on the anabolism, inflammatory responses, and arginine metabolism in parenterally fed rats with cecal puncture-induced subacute peritonitis. Male Wistar rats (8-9 weeks old), initially weighing 250 g, are used in the study. Rats are divided into 4 groups and are administered total parenteral nutrition solutions with 0, 5 (low dose), 25 (medium dose), or 50 (high dose) mg/kg per day of L-NAME for 7 days[3].

Mouse: 12-20 week old C57BL/6J mice (5 per group) are administered L-NAME (0.325mg/mL) in the drinking water. Hearts are excised at 1-day, 2-days, 5-days, 2-weeks or 6-weeks; or controls which received no L-NAME. Ventricular cross-sectional wall thickness and individual cardiac myocytes cross-sectional area and cardiomyocyte/nuclear ratio to determine cardiac hypertrophy. Immuno-histochemical staining for c-kit, sca-1 and BCRP undertaken[5].

References:

[1]. Pfeiffer S, et al. Inhibition of nitric oxide synthesis by NG-nitro-L-arginine methyl ester (L-NAME): requirement forbioactivation to the free acid, NG-nitro-L-arginine. Br J Pharmacol. 1996 Jul;118(6):1433-40.

[2]. Kopincová J, et al. L-NAME in the cardiovascular system - nitric oxide synthase activator? Pharmacol Rep. 2012;64(3):511-20.

[3]. Lo HC, et al. The Nitric Oxide Synthase Inhibitor NG-Nitro-L-Arginine Methyl Ester Diminishes the Immunomodulatory Effects of Parental Arginine in Rats with Subacute Peritonitis. PLoSOne. 2016 Mar 23;11(3):e0151973.

[4]. Luo H, et al. Effect of nitric oxide synthase inhibitor L-NAME on fear extinction in rats: a task-dependent effect. Neurosci Lett. 2014 Jun 20;572:13-8.

[5]. Ocsan RJ, et al. Chronic NG-nitro-l-arginine methyl ester (L-NAME) administration in C57BL/6J mice induces a sustained decrease in c-kit positive cells during development of cardiac hypertrophy. J Physiol Pharmacol. 2013 Dec;64(6):727-36.

CAIndexNames:

L-Ornithine, N5-[imino(nitroamino)methyl]-, methyl ester, hydrochloride (1:1)

SMILES:

N[C@@H](CCCNC(N[N+]([O-])=O)=N)C(OC)=O.[H]Cl

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