L-NAME hydrochloride

Cat. No.: HY-18729A
CAS No.: 51298-62-5
Molecular Formula: C₇H₁₆ClN₅O₄
Molecular Weight: 269.69
Target: NO Synthase
Pathway: Immunology/Inflammation
Storage: Powder -20°C 3 years
         In solvent -80°C 6 months
         -20°C 1 month

**SOLVENT & SOLUBILITY**

| In Vitro       | DMSO : 100 mg/mL (370.80 mM; Need ultrasonic)  
|               | H₂O : ≥ 32 mg/mL (118.65 mM)  
|               | * "≥" means soluble, but saturation unknown.  

<table>
<thead>
<tr>
<th>Preparing Stock Solutions</th>
<th>Solvent Concentration</th>
<th>Mass 1 mg</th>
<th>Mass 5 mg</th>
<th>Mass 10 mg</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 mM</td>
<td>3.7080 mL</td>
<td>18.5398 mL</td>
<td>37.0796 mL</td>
</tr>
<tr>
<td></td>
<td>5 mM</td>
<td>0.7416 mL</td>
<td>3.7080 mL</td>
<td>7.4159 mL</td>
</tr>
<tr>
<td></td>
<td>10 mM</td>
<td>0.3708 mL</td>
<td>1.8540 mL</td>
<td>3.7080 mL</td>
</tr>
</tbody>
</table>

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

**BIOLOGICAL ACTIVITY**

**Description**

L-NAME hydrochloride inhibits NOS with an IC₅₀ of 70 μM. L-NAME is a precursor to NOS inhibitor L-NOARG which has an IC₅₀ 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 N⁵-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 IC₅₀ = 70 μM) than L-NOARG (IC₅₀ = 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**

Rats: 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\[^3\].

Mice: 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\[^5\].

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

**REFERENCES**


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**CUSTOMER VALIDATION**

- **Toxicol Appl Pharmacol.** 2019 Mar 1;366:83-95.
- **Biomed Pharmacother.** 2019 May.
- **Exp Ther Med.** 2018 Aug;16(2):1079-1086.

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