

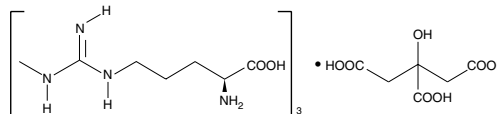
# Product Information



## L-NMMA (citrate)

Item No. 80200

**Formal Name:** N<sup>5</sup>-[imino(methylamino)methyl]-L-ornithine, citrate  
**Synonym:** L-N<sup>G</sup>-monomethyl Arginine citrate  
**MF:** 3[C<sub>7</sub>H<sub>16</sub>N<sub>4</sub>O<sub>2</sub>] • C<sub>6</sub>H<sub>8</sub>O<sub>7</sub>  
**FW:** 756.8  
**Purity:** ≥99%  
**Stability:** ≥1 year at -20°C  
**Supplied as:** A crystalline solid



### Laboratory Procedures

For long term storage, we suggest that L-NMMA (citrate) be stored as supplied at -20°C. It will be stable for at least one year.

L-NMMA is supplied as the citrate salt (making it less hygroscopic than the acetate salt and easier to work with in the open air). L-NMMA (citrate) is soluble in aqueous solutions at a concentration of at least 6 mg/ml. Prior to performing biological experiments, the L-NMMA (citrate) can be added as the crystalline solid to the buffer of choice. L-NMMA is soluble in PBS (pH 7.2) at a concentration of approximately 6 mg/ml. Although aqueous solutions of L-NMMA may be stable for more than 24 hours, we recommend making a fresh preparation everyday.

L-NMMA, an analog of L-arginine, is one of the most commonly used inhibitors of nitric oxide synthases (NOS). L-NMMA is a relatively non-selective inhibitor of all NOS isoforms. It is the archetypal NOS inhibitor to which other inhibitors are most often compared.<sup>1</sup> The K<sub>i</sub> values for nNOS (rat), eNOS (human), and iNOS (mouse) are approximately 0.18, 0.4, and 6 μM, respectively.<sup>2,3</sup>

### References

1. Griffith, O.W. and Kilbourn, R.G. Nitric oxide synthase inhibitors: Amino acids. *Methods Enzymol.* **268**, 375-392 (1996).
2. Frey, C., Narayanan, K., McMillan, K., *et al.* L-Thiocitrulline. A stereospecific, heme-binding inhibitor of nitric-oxide synthases. *J. Biol. Chem.* **269**, 26083-26091 (1994).
3. Garvey, E.P., Tuttle, J.V., Covington, K., *et al.* Purification and characterization of the constitutive nitric oxide synthase from human placenta. *Arch. Biochem. Biophys.* **311**, 235-241 (1994).

### Related Products

For a list of related products please visit: [www.caymanchem.com/catalog/80200](http://www.caymanchem.com/catalog/80200)

**WARNING: THIS PRODUCT IS FOR LABORATORY RESEARCH ONLY: NOT FOR ADMINISTRATION TO HUMANS. NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.**

#### MATERIAL SAFETY DATA

This material should be considered hazardous until information to the contrary becomes available. Do not ingest, swallow, or inhale. Do not get in eyes, on skin, or on clothing. Wash thoroughly after handling. This information contains some, but not all, of the information required for the safe and proper use of this material. Before use, the user must review the complete Material Safety Data Sheet, which has been sent via email to your institution.

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