

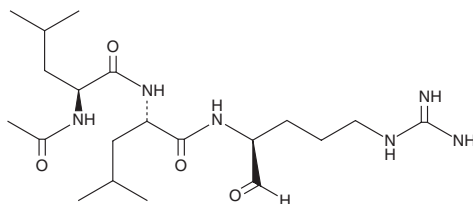
# PRODUCT INFORMATION



## Leupeptin (hemisulfate)

Item No. 14026

**CAS Registry No.:** 103476-89-7  
**Formal Name:** N-acetyl-L-leucyl-N-[4-[(aminoiminomethyl)amino]-1S-formylbutyl]-L-leucinamide, hemisulfate  
**Synonym:** Acetyl-L-leucyl-L-leucyl-L-argininal  
**MF:** C<sub>20</sub>H<sub>38</sub>N<sub>6</sub>O<sub>4</sub> • 1/2H<sub>2</sub>SO<sub>4</sub>  
**FW:** 475.6  
**Purity:** ≥90%  
**Supplied as:** A crystalline solid  
**Storage:** -20°C  
**Stability:** ≥4 years  
**Item Origin:** Synthetic



• 1/2H<sub>2</sub>SO<sub>4</sub>

Information represents the product specifications. Batch specific analytical results are provided on each certificate of analysis.

### Laboratory Procedures

Leupeptin (hemisulfate) is supplied as a crystalline solid. A stock solution may be made by dissolving the leupeptin (hemisulfate) in the solvent of choice, which should be purged with an inert gas. Leupeptin (hemisulfate) is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide. The solubility of leupeptin (hemisulfate) in these solvents is approximately 33, 16, and 25 mg/ml, respectively.

Further dilutions of the stock solution into aqueous buffers or isotonic saline should be made prior to performing biological experiments. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have physiological effects at low concentrations. Organic solvent-free aqueous solutions of leupeptin (hemisulfate) can be prepared by directly dissolving the crystalline solid in aqueous buffers. The solubility of leupeptin (hemisulfate) in PBS, pH 7.2, is approximately 10 mg/ml. We do not recommend storing the aqueous solution for more than one day.

### Description

Leupeptin is a reversible inhibitor of cysteine, serine, and threonine proteases that is produced naturally by *Streptomyces*.<sup>1</sup> It has been reported to inhibit cathepsin B (K<sub>i</sub> = 6 nM), calpain (K<sub>i</sub> = 10 nM), trypsin (K<sub>i</sub> = 35 nM), plasmin (K<sub>i</sub> = 3.4 μM), and kallikrein (K<sub>i</sub> = 19 μM), and has no effect against chymotrypsin, elastase, renin, or pepsin.<sup>1</sup> Leupeptin has been shown to be protective of auditory hair cells exposed to disruptive noise or ototoxic aminoglycoside-type antibiotics.<sup>2,3</sup> It is also widely used as a protein purification tool to prevent proteases present in tissue samples from degrading the protein of interest.

### References

1. Mehdi, S. Cell-penetrating inhibitors of calpain. *Trends Biochem. Sci.* **16(4)**, 150-153 (1991).
2. Gavriel, H., Shulman, A., Stracher, A., et al. Leupeptin reduces impulse noise induced hearing loss. *J. Occup. Med. Toxicol.* **6**, 38 (2011).
3. Momiya, J., Hashimoto, T., Matsubara, A., et al. Leupeptin, a calpain inhibitor, protects inner ear hair cells from aminoglycoside ototoxicity. *Tohoku J. Exp. Med.* **209(2)**, 89-97 (2006).

#### WARNING

THIS PRODUCT IS FOR RESEARCH ONLY - NOT FOR HUMAN OR VETERINARY DIAGNOSTIC OR THERAPEUTIC USE.

#### SAFETY DATA

This material should be considered hazardous until further information becomes available. Do not ingest, inhale, get in eyes, on skin, or on clothing. Wash thoroughly after handling. Before use, the user must review the complete Safety Data Sheet, which has been sent via email to your institution.

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