

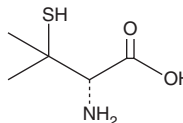
# PRODUCT INFORMATION



## D-Penicillamine

Item No. 23955

**CAS Registry No.:** 52-67-5  
**Formal Name:** 3-mercapto-D-valine  
**Synonyms:** NSC 81549,  $\beta$ -Thiovaline  
**MF:**  $C_5H_{11}NO_2S$   
**FW:** 149.2  
**Purity:**  $\geq 98\%$   
**Supplied as:** A crystalline solid  
**Storage:**  $-20^\circ\text{C}$   
**Stability:**  $\geq 4$  years



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

### Laboratory Procedures

D-Penicillamine is supplied as a crystalline solid. A stock solution may be made by dissolving the D-penicillamine in the solvent of choice, which should be purged with an inert gas. D-Penicillamine is soluble in organic solvents such as ethanol, DMSO, and dimethyl formamide (DMF). The solubility of D-penicillamine in ethanol is approximately 5 mg/ml and 30 mg/ml in DMSO and DMF.

D-Penicillamine is sparingly soluble in aqueous buffers. For maximum solubility in aqueous buffers, D-penicillamine should first be dissolved in DMSO and then diluted with the aqueous buffer of choice. D-Penicillamine has a solubility of approximately 0.12 mg/ml in a 1:7 solution of DMSO:PBS (pH 7.2) using this method. We do not recommend storing the aqueous solution for more than one day.

### Description

D-Penicillamine is an orally bioavailable copper chelator and penicillin degradation product.<sup>1,2</sup> It increases urinary and fecal copper excretion and decreases liver copper concentration in a rat model of copper overload when administered at 0.67 mmol/kg per day, but does not affect kidney, spleen, or brain copper levels.<sup>3</sup> D-Penicillamine (100 mg/kg per day) dissolves copper-rich granules in hepatic lysosomes of Long-Evans cinnamon (LEC) rats, which spontaneously develop hepatic injury and acute hepatitis and have a mutation homologous to that of the human Wilson disease gene.<sup>4</sup> D-Penicillamine has anticonvulsant and proconvulsant effects in mice when administered at 0.5 and 250 mg/kg, respectively, which are blocked by the nitric oxide synthase (NOS) inhibitors L-NAME (Item No. 80210) and 7-nitroindazole (Item No. 81340).<sup>5</sup> Formulations containing D-penicillamine have been used to treat Wilson disease, cystinuria, and active rheumatoid arthritis.

### References

1. Delangle, P. and Mintz, E. *Dalton Trans.* **41(21)**, 6359-6370 (2012).
2. Abraham, E.P., Chain, E., Baker, W., et al. *Nature* **151(3821)**, 107 (1943).
3. Domingo, J.L., Gómez, M., and Jones, M.M. *Biol. Trace Elem. Res.* **74(2)**, 127-139 (2000).
4. Klein, D., Lichtmannegger, J., Heinzmann, U., et al. *J. Hepatol.* **32(2)**, 193-201 (2000).
5. Rahimi, N., Sadeghzadeh, M., Javadi-Paydar, M., et al. *Epilepsy Behav.* **39**, 42-47 (2014).

#### 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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#### CAYMAN CHEMICAL

1180 EAST ELLSWORTH RD  
ANN ARBOR, MI 48108 · USA

**PHONE:** [800] 364-9897  
[734] 971-3335

**FAX:** [734] 971-3640

CUSTSERV@CAYMANCHEM.COM  
[WWW.CAYMANCHEM.COM](http://WWW.CAYMANCHEM.COM)