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Product Information

Neocuproine

Product Number **N1501**
Store at Room Temperature

Product Description

Molecular Formula: $C_{14}H_{12}N_2$
Molecular Weight: 208.3
CAS Number: 484-11-7
Melting Point: 159-160 °C
Synonym: 2,9-dimethyl-1,10-phenanthroline,
2,9-dimethyl-*o*-phenanthroline¹

Neocuproine is a aromatic heterocyclic compound and methylated phenanthroline derivative. It can be used for the spectrophotometric determination of copper and chelates cuprous ion in the presence of ferrous ion. The Cu-neocuproine complex consists of two molecules of neocuproine with one cuprous ion, with a maximum absorption at 454 nm (E^{mM} 7.95).² A study of the extraction of the Cu-neocuproine complex from acetate buffered aqueous solutions by propylene carbonate has been published.³

Treatment with neocuproine of the mouse corpus cavernosum precontracted with phenylephrine to probe nitrgic relaxations has been investigated.⁴ Neocuproine has been used to mitigate the oxidative effects of copper ions and cytochrome P450 on rat aorta.⁵ The effect of neocuproine on the nitrgic neurotransmitter in the mouse gastric fundus has been studied.⁶

The cross-coupling reaction of aryl iodides and thiols using neocuproine and CuI has been described.⁷ Oligonucleotide ribozyme mimics that contain neocuproine conjugates have been prepared for use as RNA cleaving agents.⁸

Precautions and Disclaimer

For Laboratory Use Only. Not for drug, household or other uses.

Preparation Instructions

The product is soluble in methanol (50 mg/ml), yielding a clear, pale yellow solution. It is soluble in ethanol, n-amyl alcohol, isoamyl alcohol, n-hexyl alcohol, chloroform and benzene, and slightly soluble in cold water.

References

1. The Merck Index, 12th ed., Entry# 6537.
2. Smith, G. F., and McCurdy, W. H., Jr., 2,9-dimethyl-1,10-phenanthroline. *Anal. Chem.*, **24**, 371-373 (1952).
3. Stephens, B. G., et al., Spectrophotometric determination of copper and iron subsequent to the simultaneous extraction of bis(2,9-dimethyl-1,10-phenanthroline)copper(I) and bis[2,4,6-tri(2-pyridyl)-1,3,5-triazine]iron(II) into propylene carbonate. *Anal. Chem.*, **46**, 692-696 (1974).
4. Gocmen, C., et al., Effect of neocuproine, a selective Cu(I) chelator, on nitrgic relaxations in the mouse corpus cavernosum. *Eur. J. Pharmacol.*, **406(2)**, 293-300 (2000).
5. Nelli, S., et al., Role of copper ions and cytochrome P450 in the vasodilator actions of the nitroxyl anion generator, Angeli's salt, on rat aorta. *Eur. J. Pharmacol.*, **412(3)**, 281-289 (2001).
6. De Man, J. G., et al., Pre- and postjunctional protective effect of neocuproine on the nitrgic neurotransmitter in the mouse gastric fundus. *Br. J. Pharmacol.*, **132(1)**, 277-285 (2001).
7. Bates, C. G., et al., A general method for the formation of aryl-sulfur bonds using copper(I) catalysts. *Org. Lett.*, **4(16)**, 2803-2806 (2002).
8. Putnam, W. C., et al., Efficient new ribozyme mimics: direct mapping of molecular design principles from small molecules to macromolecular, biomimetic catalysts. *Nucleic Acids Res.*, **29(10)**, 2199-2204 (2001).

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