METHYL-(5-[2-THIENYLCARBONYL]-1 H-BENZIMIDAZOL-2-YL)CARBAMATE
Sigma Prod. No. M1404

ProductInformation

CAS NUMBER: 31430-18-9
SYNONYMS: Nocodazole, R17934, NSC 238159[1]

PHYSICAL PROPERTIES:

Appearance: White with faint yellow cast powder
Molecular Formula: $C_{14}H_{11}N_3O_3S$
Molecular weight: 301.3 (Anhydrous MW/water content not determined by Sigma.)
Melting point: 256°C[1]
Melting point: 299°C[2]

STORAGE / STABILITY AS SUPPLED:

Stored properly at 2 - 8°C, as a powder, nocodazole should have a minimum shelf life of two to three years.

SOLUBILITY / SOLUTION STABILITY:

Sigma tests the solubility of nocodazole at 10 mg/ml in DMSO. Warming may be required. For cell culture work, stock solutions are made at 5 mg/mL in DMSO and diluted further in culture media. Doses of 10 μg/mL could not be used because of insolubility.[3] Soluble in formic acid, benzaldehyde, DMSO, and a mixture of chloroform:methanol (2:1). Only slightly soluble in water. A pharmaceutical solution was prepared in PEG 400. Suspensions have been prepared in saline and other aqueous systems.[1] Soluble at 10E-4 in 1% DMSO in water. However, it will slowly precipitate in the course of 1-2 hours. 12% DMSO will maintain solubility for greater than 2 hours.[4]

This compound is stable in biological media for at least 7 days.[5] Frozen aliquots in DMSO or DMF are quite stable at -20°C for several months.[4]

USAGE:

Nocodazole is an anticancer drug that has been shown to interfere with the structure and function of microtubules in interphase and mitotic cells. Malignant cells may be more susceptible to the antimicrotubular effect of nocodazole than nonmalignant cells. Mammalian cells cultured in vivo were treated with 0.04-10 μg/mL doses. Higher concentrations could not be used because of insolubility. High specificity of action may explain low toxicity to bone marrow cells and lack of neurotoxicity.[3]

Nocodazole is thought to bind directly to tubulin causing conformational changes resulting in increased exposure of some sulfhydryl and possibly tyrosine residues.[4]

Nocodazole's apparent synergism with cytosine arabinofuranoside has been demonstrated on L1210 leukemic cells.

REFERENCES:

1. Atassi, G. and Tagnon H., Eur. J. Cancer., vol. 11, 599 (1975).
2. Aldrich MSDS.
3. De Bradbander, M., et al., Cancer Research, vol. 36, 905 (1976).
4. Lee, J., et al., Biochemistry, vol. 19, 6209 (1980).
5. Supplier Information.
6. Atassi, G., et al., Eur. J. Cancer, vol. 11, 599 (1975).