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ProductInformation

Phleomycin
from *Streptomyces verticillus*

Product Number **P 9564**
Storage Temperature 2-8 °C

Product Description

Molecular Formula: $C_{55}H_{85}O_{21}N_{20}S_2Cu \bullet HCl$
Molecular Weight: 1526.5
CAS Number: 11006-33-0

Phleomycin is a glycopeptide antibiotic, structurally related to the antibiotic, bleomycin. This purified phleomycin is mainly composed of phelomycin D1 (terminal amine is agmatine) in a copper chelate and hydrochloride salt form.

Phleomycin blocks S-phase entry in the cell cycle. While phleomycin can damage DNA similar to bleomycin, it is not used as an anticancer agent.[1] Although the mechanism of action of phleomycin has not been clearly defined, it is reportedly unable to intercalate DNA due to a modified bithiazole moiety.[2] The RAD6 DNA repair gene is essential for phleomycin resistance in mutant yeast.[1]

Phleomycin is used as a selective agent in molecular genetics experiments. Phleomycin has a broad spectrum of toxicity, exhibiting *in vivo* activity against bacteria, eukaryotic organisms, and plant and animal cells. Phleomycin, can thus be useful for identification and selection of a variety of cell types carrying a phleomycin resistant gene, like the *Sh ble* gene.

Phleomycin has toxicity against bacteria (*E. coli*), and is used at 5 µg/ml in media for selecting resistant transformants. It is also used at 5-50 µg/ml for eukaryotic microorganisms, at 10 ug/ml for yeasts, at 10-50 ug/ml for fungi, and at 5-25 µg/ml for plants. Since the sensitivity of cultured cells to phleomycin is increased at higher pH, a lower concentration of phleomycin can be used in a higher pH medium, for complete cell growth inhibition. The activity of phleomycin is reduced by a factor of 2-3 in hypertonic media.

Precautions and Disclaimer

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

Preparation Instructions

Phleomycin is freely soluble in water (20 mg/ml), yielding a light, blue solution. It is also slightly soluble in methanol.

Storage/Stability

The powder is very hygroscopic and should be stored desiccated. Phleomycin is sensitive to high concentrations of acids, but solutions can be exposed for a short-term to dilute acids without adverse affects.

Solutions can be sterile filtered and stored as single-use aliquots at -20 °C.

References

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2. Povirk, L.F., et al., Copper(II) bleomycin, iron(III) bleomycin, and copper(II) phleomycin: comparative study of deoxyribonucleic acid binding. Biochemistry, **20**, 665-671 (1981).
3. Robson, C.N., et al., Bleomycin and X-ray-hypersensitive Chinese hamster ovary cell mutants: genetic analysis and cross-resistance to neocarzinostatin. Mutat. Res., **193**, 157-165 (1988).
4. Sleigh, M.J., and Grigg, G.W., Sulphydryl-mediated DNA breakage by phleomycin in *Escherichia coli*. Mutat. Res., **42**, 181-190 (1977).

ARO/JRC 1/03