

Product Information

Filipin III from *Streptomyces filipinensis*

Product Number **F 4767**
Storage Temperature -0 °C

Product Description

Molecular Formula: C₃₅H₅₈O₁₁

Molecular Weight: 654.8

CAS Number: 480-49-9

Melting Point: 163-180 °C¹

λ_{max} : 243 nm, 308 nm, 321 nm,
327 nm, and 354 nm (methanol)²

Extinction Coefficient: E^{1%} = 62 (243 nm),
413 (308 nm), 851 (321 nm), 1368 (337 nm),
1343 (354 nm)²

Specific rotation: -245° (c=0.8, DMF, 25 °C)²

Filipin is a polyene macrolide antibiotic. Filipin III is the major component of 8 isomeric components in filipin.² The stereochemical configuration of filipin III has been determined. The structure was confirmed by synthesis.³ A method for the isolation of filipin III from the filipin complex has been published.¹

Filipin has been used in a double staining procedure as a probe for the detection of lipoproteins in polyacrylamide gels. The gel is stained first with filipin to detect lipoproteins; then it is stained with Coomassie[®] Brilliant Blue to detect all other proteins.⁴

Filipin has also been used as a probe for the detection of lipoproteins following transfer from agarose electrophoresis gels to nitrocellulose membranes. An aqueous suspension of filipin was prepared by first dissolving it at a concentration of 10 mg/ml in dimethylformamide (DMF), then diluting 100-fold with 10 mM phosphate buffered saline (PBS). Membranes were stained for four hours at 37 °C and washed for two hours at room temperature in several changes of PBS. This method was not deleterious to lipoprotein, allowing subsequent immunochemical reprobing.⁵

Filipin has been used clinically as a stain for free cholesterol in the study of Type C Niemann-Pick disease.⁶

Filipin is a potent inhibitor of the pathological scrapie isoform of prion protein (PrP-res). It binds to membrane sterols (such as cholesterol) and it both inhibits prion protein (PrP) endocytosis and causes the release of PrP from the plasma membrane.⁷ Filipin III has also been used to study the mechanism by which various cell types internalize (endocytose) cholera toxin (CT).⁸

Precautions and Disclaimer

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

Preparation Instructions

A stock solution may be made by dissolving the filipin III in an organic solvent purged with an inert gas. Filipin III is soluble in organic solvents such as ethanol (2 mg/ml), DMSO (5 mg/ml), and dimethyl formamide (10 mg/ml).

Filipin III has low solubility in aqueous buffers. Therefore, to prepare an aqueous solution of this compound, it should be dissolved in a water-miscible organic solvent first. Ensure that the residual amount of organic solvent is insignificant, since organic solvents may have adverse effects, even at low concentrations, in biological systems. For maximum solubility in aqueous buffers, filipin III should first be dissolved in DMSO and then diluted with saline or the aqueous buffer of choice. It has been reported that filipin III has a solubility of 0.4 mg/ml in a 1:4 solution of DMSO:PBS (pH 7.2) using this method.

Storage/Stability

Dilute solutions of filipin III should be protected from light.⁵ Solutions of filipin III in either aqueous or organic solvent are recommended to be used within 24 hours.

References

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4. Smejkal, G. B., and Hoff, H. F., Filipin staining of lipoproteins in polyacrylamide gels: sensitivity and photobleaching of the fluorophore and its use in a double staining method. *Electrophoresis*, **15(7)**, 922-925 (1994).
5. Smejkal, G. B., and Hoff, H. F., Cholesterol-specific probe for lipoproteins immobilized on nitrocellulose membranes. *BioTechniques*, **16(1)**, 68-70 (1994).
6. Coxey, R. A., et al., Differential accumulation of cholesterol in Golgi compartments of normal and Niemann-Pick type C fibroblasts incubated with LDL: a cytochemical freeze-fracture study. *J. Lipid Res.*, **34(7)**, 1165-1176 (1993).
7. Marella, M., et al., Filipin prevents pathological prion protein accumulation by reducing endocytosis and inducing cellular PrP release. *J. Biol. Chem.*, **277(28)**, 25457-25464 (2002).
8. Torgersen, M. L., et al., Internalization of cholera toxin by different endocytic mechanisms. *J. Cell Sci.*, **114(Pt 20)**, 3737-3747 (2001).

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