

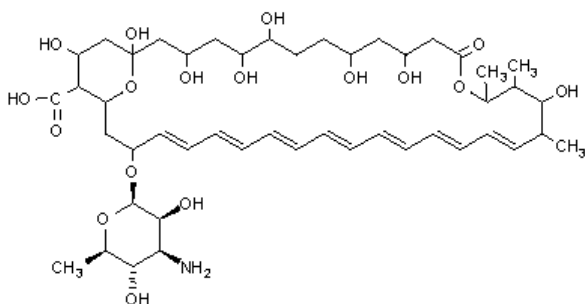
Product Information

Amphotericin B from *Streptomyces* sp.

Catalog Number **E3789**
Storage Temperature 2–8 °C

CAS RN 1397-89-3

Product Description



Molecular formula: C₄₇H₇₃NO₁₇
Molecular weight: 924.08

Melting Point:¹ >170 °C with decomposition
 λ_{max} :¹ 345, 363, 382, 406 nm (methanol)
pK_a:² 5.5, 10.0

Amphotericin B is a polyene antifungal antibiotic from *Streptomyces* sp. It has a high affinity for sterols, primarily ergosterols, of fungal³ and bacterial cell membranes.⁴ After binding to sterols, it forms channels in the membranes, causing small molecules to leak out. Amphotericin B is effective against fungi and yeast. The name of the drug is derived from the amphoteric behavior of the drug, due to the carboxyl group on the main ring and a primary amino group on the mycosamine ring.⁵

Amphotericin B induces K⁺ leakage, which is separate from its lethal action, as was demonstrated in human erythrocytes and is due to the inhibitory effect on the Na⁺/K⁺ pump.⁶ At sub-lethal concentrations, this drug stimulates either the activity of some membrane enzymes or cellular metabolism,³ in particular stimulation of some cells of the immune system.⁷

Minimum inhibitory concentrations range from 0.03–1 µg/mL for a variety of organisms including strains of *Candida*, *Rhizopus*, *Aspergillus*, and *Coccidioides*. It is inactive against bacteria, rickettsia, and viruses.

Normal usage for maintenance of cell cultures is 2.5 mg/L with penicillin and streptomycin in the medium.⁸ For cultures already contaminated with yeast and fungus, use of this product at 2–4 times the normal level (5–10 mg/L), without penicillin and streptomycin for 2–3 subcultures is recommended. Once the contamination is under control, normal maintenance levels of amphotericin B should be used. SigmaClean[®] water bath treatment (Catalog Number S5525) is recommended for cleaning the incubator and for adding to the water reservoir to eliminate yeast and fungal contamination.

Precautions and Disclaimer

For R&D use only. Not for drug, household, or other uses. Please consult the Safety Data Sheet for information regarding hazards and safe handling practices.

Preparation Instructions

Amphotericin B is insoluble in water at pH 6 to 7, but soluble in water at pH 2 or 11. It is soluble in DMSO (30–40 mg/mL) and in dimethylformamide (2–4 mg/mL). Aqueous solutions cannot be sterile filtered due to poor solubility.

Storage/Stability

Amphotericin B remains active for 3 days in culture at 37 °C. For long term, storage at 2–8 °C, protected from air and light, is recommended.¹ Under these conditions the products remain active for 5 years.

Preparation instructions

If reconstituted at 25 mg/10 mL of sterile water, there is no need to filter sterilize. This will yield a slightly hazy yellow solution.

References

1. The Merck Index, 12th ed., No. 627, (1996).
2. Clarke's Isolation and Identification of Drugs, 2nd ed., Moffat, A. C., et al., Eds, The Pharmaceutical Press (London, GB: 1988), p. 351.
3. Bolard, J., Biochim. Biophys. Acta, **864**: 257-304 (1986).
4. Venegas, B., et al., Biophys. J., **85**, 2323-32 (2003).
5. The Pharmacological Basis of Therapeutics, 8th ed., Gilman, A. G. and Goodman, L. S., Eds., McGraw-Hill (New York, NY: 1990), p. 1165.
6. Vertut-Doi, A., et al., Biochem. Biophys. Res. Commun., **157**, 692-97 (1988).
7. Sau K., et al., J. Biol. Chem., **278**, 37561-68 (2003).
8. Perlman, D., Methods Enzymol., **58**, 110-16 (1979).

SigmaClean is a registered trademark of Sigma-Aldrich Co. LLC.

PCG,MAM 12/19-1