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| <b>Product Name:</b>                 | Amphotericin B, USP   |
| <b>Product Number:</b>               | A007  |
| <b>CAS Number:</b>                   | 1397-89-3   |
| <b>Molecular Formula:</b>            | C <sub>47</sub> H <sub>73</sub> NO <sub>17</sub>  |
| <b>Molecular Weight:</b>             | 924.08  |
| <b>Form:</b>                         | Powder  |
| <b>Appearance:</b>                   | Yellow or orange powder   |
| <b>Solubility:</b>                   | DMSO (35 mg/ml), DMF (3 mg/ml)  |
| <b>Source:</b>                       | <i>Streptomyces nodosus</i>   |
| <b>Water Content (Karl Fischer):</b> | ≤5.0%   |
| <b>Storage Conditions:</b>           | 2-8°C   |
| <b>Description:</b>                  | <p>Amphotericin B, USP is a polyene antifungal or antimycotic compound derived from <i>Streptomyces nodosus</i>. It is used to control contamination from fungi, viruses and protozoa.</p> <p>TOKU-E offers 3 forms of Amphotericin B:</p> <ul style="list-style-type: none"><li>• Amphotericin B, USP (A007)</li><li>• <u>Amphotericin B, EP (A064)</u></li><li>• <u>Amphotericin B, solubilized (A008)</u></li></ul> <p>The compound is nearly insoluble in water at pH 6-7 (but is soluble at pH 2 or 11). It is soluble in dimethyl sulfoxide and dimethylformamide.</p> <p>Amphotericin B, USP conforms to United States Pharmacopoeia specifications.</p> |
| <b>Mechanism of Action:</b>          | <p>Amphotericin B associates with membrane sterols (ergosterol in fungal cell membranes, and cholesterol in mammalian cell membranes). Amphotericin B forms a pore in these membranes resulting in leakage of essential ions and ultimately cell death.</p>   |

**Spectrum:**

Amphotericin B is active against mammalian cells, fungi, viruses, and protozoa. Amphotericin B is not toxic to bacteria due to their lack of sterols. The following represents MIC susceptibility data for amphotericin B against common fungal pathogens:

- *Candida albicans* - 0.001 - 321 µg/mL
- *Candida krusei* - 0.001 - 16 µg/mL
- *Coccidioides immitis* - 0.0625 - 2 µg/mL
- *Cryptococcus neoformans* - 0.2 - 39 µg/mL
- *Fusarium oxysporum* - 0.75 - 125 µg/mL

**Microbiology Applications**

Amphotericin B is used as an antimycotic selective agent in several routinely used selective media formulations to inhibit the growth of background fungal growth. It can also combat viruses and protozoa.

**Plant Biology Applications**

Amphotericin B can be used to inhibit phytopathogenic fungi *in vitro*.

**References:**

- Brajtburg, J, Powderly WG, Kobayashi GS, and Medoff G. (1990) Amphotericin B: Current understanding of mechanisms of action. *Antimicrob. Agents and Chemother.* 34 (2):183-88. PMID 2183713
- Mangé A et al. (2000) Amphotericin B inhibits the generation of the scrapie isoform of the prion protein in infected cultures. *J. Virol.* 74(7):3135-3140 PMID 10708429
- Perez-de-Luque A et al. (2012) Effect of Amphotericin B nanodisks on plant fungal diseases. 68(1). PMID 21710554
- Rice, LB, and Ghannoum MA (1999). Antifungal Agents: Mode of action, mechanisms of resistance, and correlation of these mechanisms with bacterial resistance.. *Clin. Microbiol. Rev.* 12(4):501-517 PMID 10515900
- Radomski N, Cambau E, Moulin L, Haenn S, Moilleron R, and Lucas FS (2010) Comparison of culture methods for isolation of nontuberculous *Mycobacteria* from surfacewaters. *Appl. Environ. Microbiol* 76(11):3514-3520 PMID 20363776
- Schaffner CP et al (1986) Anti-viral activity of Amphotericin B methyl ester: inhibition of HTLV-III replication in cell culture. *Biochem. Pharmacol.* 35(22):4110-4113 PMID 3640625
- Sokol-Anderson ML, Braitburg J, Medoff G (1986) Amphotericin B-induced oxidative damage and killing of *Candida albicans*. *J. Infect. Dis.* 154(1):76-83 PMID 3519792