

Product Name:	Polymyxin B6 Sulfate, EvoPure [®]
Product Number:	P054
Molecular Formula:	C ₅₆ H ₉₈ N ₁₆ O ₁₄ • xH ₂ SO ₄ (lot specific)
Molecular Weight:	1219.47 (Free base)
Form:	Powder
Source:	<i>Bacillus Polymyxa</i>
Description:	Polymyxin B sulfate is a polypeptide antibiotic and is composed of polymyxins B1, B2, and B3 with fractions B1 and B2 comprising the majority of the mixture. Polymyxin B6 sulfate is freely soluble in aqueous solution (25 mg/mL). Polymyxin B components are structurally identical with the exception of a variable fatty acid group on each fraction. Results from <i>in vitro</i> studies have shown marginal differences in MIC data when comparing the fractions. TOKU-E offers six forms of polymyxin B sulfate: <u>polymyxin B sulfate (P007)</u>, <u>polymyxin B1 sulfate, EvoPure[®] (P037)</u>, <u>polymyxin B1-I sulfate, EvoPure[®] (P038)</u>, <u>polymyxin B2 sulfate, EvoPure[®] (P039)</u>, <u>polymyxin B3 sulfate, EvoPure[®] (P040)</u>, and polymyxin B6 sulfate, EvoPure[®]. EvoPure[®] products are purified single antibiotic fractions, most >99% pure. High purity EvoPure[®] polymyxin products can be used to analyze the specific effects of individual polymyxin B fractions.
Mechanism of Action:	Polymyxin B targets and alters permeability lipopolysaccharide (LPS) of gram negative bacteria leading to lysing of the cell. Polymyxin B only needs to interact with LPS, it is not required to enter the cell.
Spectrum:	Polymyxin B sulfate targets the outer membrane of gram negative bacteria especially <i>Pseudomonas aeruginosa</i> .

Microbiology Applications Polymyxin B sulfate is commonly used in clinical *in vitro* microbiological antimicrobial susceptibility tests (panels, discs, and MIC strips) against gram negative microbial isolates. Medical microbiologists use AST results to recommend antibiotic treatment options for infected patients. Representative MIC values include:

- *Pseudomonas aeruginosa* 0.25 µg/mL – 1 µg/mL
- For a complete list of polymyxin B sulfate MIC values, [click here](#).

Media Supplements

Polymyxin B is routinely used as a selection agent in several types of isolation media:

[Perfringens agar](#) - Supplement A and Supplement B

[Perfringens Agar](#) - SFP and TSC selective supplements

[Columbia Blood Agar](#) - *Campylobacter* selective supplement (Skirrow)

[Columbia Blood Agar](#) - *Campylobacter* selective supplement (Blaser-Wang)

[Brucella medium](#) - *Brucella* selective supplement

[MYP Agar](#) - Polymyxin B *Bacillus* selection supplement

[Legionella CYE Agar](#) - *Legionella* BMPA-α Selective Supplement

[Legionella CYE Agar](#) - *Legionella* MWY Selective Supplement

[Campylobacter Agar](#) - *Campylobacter* Selective Supplement (Preston)

[PALCAM Agar](#) - PALCAM Selective Supplement

[Legionella CYE Agar](#) - *Legionella* GVPC Selective Supplement

[m-CP Medium](#) - Membrane *C. perfringens* Selective Supplement

[Burkholderia cepacia Agar Base](#) - *Burkholderia cepacia* Selective Supplement

[ORSAB](#) - ORSAB Selective Supplement

[Campylobacter Agar Base](#) - Modified Preston *Campylobacter* Selective Supplement

[Brucella Medium Base](#) - Modified *Brucella* Selective Supplement

[Legionella CYE Agar](#) - *Legionella* GVPN Selective Supplement

[Chromogenic *Listeria* Agar](#) - Chromogenic *Listeria* Selective Supplement

[Chromogenic *Bacillus cereus* Agar](#) - Chromogenic *Bacillus cereus* Selective Supplement

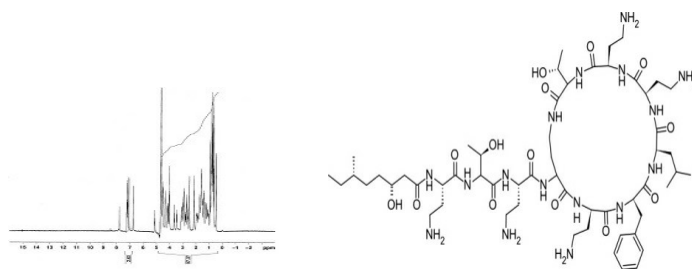
[Chromogenic *Listeria* Agar](#) - Chromogenic *Listeria* Differential Supplement

Plant Biology Applications

Polymyxin B sulfate was successfully tested to counteract phytopathogenic gram-negative bacterial growth including different strains of *Pseudomonas viridiflava* and *Erwinia carotovora*. Polymyxin B sulfate was shown to reduce bacterial growth of different strains of *Pseudomonas viridiflava* at low concentrations, (0.08 µg/ml) and *Erwinia carotovora* growth at slightly higher concentrations (0.25 µg/ml) (Selim et al. 2005). Polymyxin B has been shown to elicit alkaloid accumulation in *E. californica*. Treatment at 0.04 mg/ml for 4 hours showed a 5.5 times increase in Jasmonate levels over the control (water).

Technical Data:

HNMR Spectra



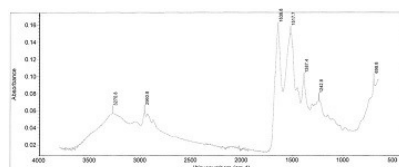
[Click to enlarge](#)

Solvent: D₂O

Instrument: Mercury 300

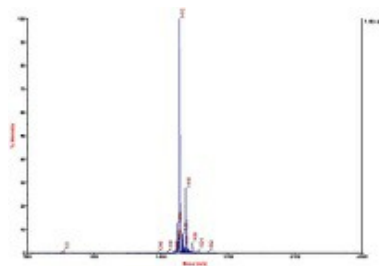
Frequency: 300 MHz

FTIR Spectra



[Click to enlarge](#)

Mass Spectra



[Click to enlarge](#)

Polarity/Scan Type: Positive

Solvent: Water

Solution Concentration: 10 mg/mL

References:

- Newton, B. A. "The Properties and Mode of Action of the Polymyxins." *Bacteriology Reviews* (n.d.): 14-27. www.ncbi.gov. Web. 21 Aug. 2012.
- Selim S., Negrel J., Govaerts C., Gianinazzi S. and Tuinen van D., 2005, Isolation and Partial Characterization of Antagonistic Peptides Produced by *Paenibacillus* sp. Strain B2 Isolated from the Sorghum Mycorrhizosphere. *Applied and Environmental Microbiology*, Nov. 2005, p. 6501–6507
- Zavascki, Alexandre Prehn et al. "Polymyxin B for the Treatment of Multidrug-resistant Pathogens: A Critical Review." *Journal of Antimicrobial Chemotherapy* 60 (2007): 1206-215. *Oxfordjournals*. Web. 15 Jan. 2013.
- Li, Jian et al. "Development and Validation of a Reversed-phase High-performance Liquid Chromatography Assay for Polymyxin B in Human Plasma." *Journal of Antimicrobial Chemotherapy* (2009): n. pag. *Oxfordjournals*. Web. 15 Jan. 2013.
- Tam, Vincent H, et al. "In Vitro Potency of Various Polymyxin B Components." *In Vitro Potency of Various Polymyxin B Components* 55.9 (2011): 4490-491. *Asm.org*. Web. 15 Jan. 2013.
- Orwa, J. A., et al "Isolation and Structural Characterization of Polymyxin B Components." *Isolation and Structural Characterization of Polymyxin B Components* 912.2 (2001): 369-73. *Sciencedirect*. Web. 15 Jan. 2013.
- MJ Mueller, W Brodschelm. "Signaling in the elicitation process is mediated through the octadecanoid pathway leading to jasmonic acid". *Proc. Natl. Acad. Sci. USA* Vol. 90, pp. 7490-7494, August 1993.

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