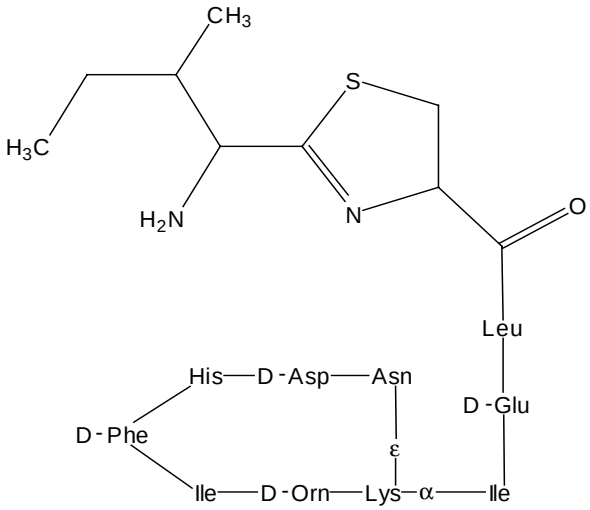
ProductInformation

BACITRACIN
Sigma Prod. No. B0125

CAS NUMBER: 1405-87-4

SYNONYMS: Ayfivin; Baciguent; Baci-Jel; Baciliquin;Bacitek Ointment; Fortracin; Parentracin; Penitracin; Topitracin; USAF CB-7; Zutracin



Bacitracin A

PHYSICAL AND CHEMICAL PROPERTIES:

Appearance: Powder, white to yellow with a tan cast
Molecular Formula: $C_{66}H_{103}N_{17}O_{16}S$ (Bacitracin A)
Molecular Weight: 1422.7 (Bacitracin A)
Melting Point: 221-225°C[1]
Isoelectric point: pI = 8.8 (Messing's method); 8.5 (electrophoresis)[2]
pH of 1% solution = 6-7[3]
E^{mM}(225nm) = 6.25[6]
E^{mM}(252nm) = 2.50[6]
λ(exc) = 292nm[2]
λ(emiss) = 325nm[2]

FOR SPECIFICATIONS SEE CATALOG

PRODUCT DESCRIPTION:

Commercial Bacitracin is a mixture of at least 9 Bacitracins, of which Bacitracin A is the major component.[4] Bacitracin is a polypeptide complex produced by *Bacillus subtilis* and *Bacillus licheniformis*, and is used as an antibacterial agent, primarily against gram-positive organisms.[4,5] Bacitracin inhibits bacterial cell wall synthesis by inhibiting dephosphorylation of lipid pyrophosphate.[15] Excellent review articles pertaining to Bacitracin (including its mechanism of action) have been published.[2,16,17,18,19]

METHODS OF PREPARATION AND PURIFICATION:

B-0125 is manufactured by fermentation. No bovine tissue or bovine tissue extract is used. Several methods of preparation (not necessarily those of Sigma's supplier) for Bacitracin and its fragments have been published in the literature.[7,8,9,10,11,12]

STABILITY / STORAGE AS SUPPLIED:

This hygroscopic product should be stored desiccated at 2-8°C. The stability of Bacitracin at various temperatures has been discussed in the literature.[2]

SOLUBILITY / SOLUTION STABILITY:
Sigma tests the solubility of B-0125 in water at 50 mg/mL and obtains clear to slightly hazy, yellow to yellow-tan solutions.

The solubility of Bacitracin has been discussed in the literature.[2,13] Bacitracin is very soluble in water and methanol; soluble in ethanol; slightly soluble in acetone, benzene and ether; and practically insoluble in chloroform, ether and acetone.[4,14] Aqueous solutions degrade rapidly at room temperature.[3] Bacitracin is relatively stable in acidic solutions and unstable above pH 9.[14] An observed loss in potency is probably due to transformation of Bacitracin A into Bacitracin F, which has a low antimicrobial activity.[4] Sigma's supplier has provided the following solution stability data:

	% Activity Retained After Number of Hours Indicated			
pH	23 Hours	71 Hours	120 Hours	143 Hours
2.4	58	37	18	N/A
4.4	94	88	70	N/A
5.9	90	73	N/A	45
7.9	88	56	N/A	31
9.0	80	27	27	N/A

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