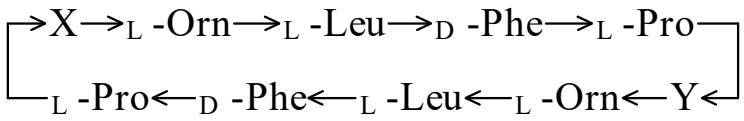
>>**Entry Name: Gramicidin S,** INN
Synonym(s): Soviet gramicidin. Gramicidin C. Gramicidin J1. Gramicidin J2



S_1 X = Y = L-Val
S_2 X = 2-Aminobutanoic acid, Y = L-Val
S_3 X = Y = 2-Aminobutanoic acid

CAS Registry Number: 113-73-5

Source/Synthesis: Prod. by *Bacillus brevis*
Use/Importance: Antibiotic used clinically in topical applications. Active against gram-positive bacteria
Solubility: BERDY SOL: Sol. EtOH, MeOH, $CHCl_3$; fairly sol. Me_2CO, H_2O; poorly sol. C_6H_6, hexane, Et_2O
UV: [neutral] λ_{max} 249 (); 258 (); 265 () (EtOH) (Berdy)
Hazard & Toxicity: LD_{50} (rat, ipr) 17 mg/kg ; BERDY HAZD : LD_{50} (mus, ipr) 20.8 mg/kg

>>**Variant: Gramicidin S_1**
Synonym(s): Gramicidin S-A

Molecular Formula: $C_{60}H_{92}N_{12}O_{10}$
Molecular Weight: 1141.461
Accurate Mass: 1140.705938
Percentage Composition: C 63.13%; H 8.12%; N 14.73%; O 14.02%
Physical Description: Needles (Me_2CO aq.)
Optical Rotation: $[\alpha]_D^{18}$ –289 (c, 0.43 in 70% EtOH)
Solubility: Sol. Et_2O, EtOH, Me_2CO, insol. H_2O; BERDY SOL: Sol. MeOH-H_2O, Me_2CO, $CHCl_3$; fairly sol. EtOH; poorly sol. H_2O, Et_2O, hexane
Other Data: Major component of Gramicidin S complex
Hazard & Toxicity: BERDY HAZD : LD_{50} (rats, ivn) 17 mg/kg

>>**Derivative:** Hydrochloride (1:2)

Physical Description: Cryst. + $3H_2O$ (EtOH/HCl)
Melting Point: Mp 274-279°
Optical Rotation: $[\alpha]_D$ –260 (c, 0.4 in EtOH)

>>**Derivative:** All-L-analogue

Physical Description: Rods + $4H_2O$ (as hydrochloride)
Melting Point: Mp 246-247° (hydrochloride)
Optical Rotation: $[\alpha]_D^{24}$ –76.8 (c, 0.66 in 60% EtOH aq.)
Other Data: Biol. inactive

>>**Variant: Gramicidin S_2**

CAS Registry Number: 92278-12-1

Molecular Formula: $C_{59}H_{90}N_{12}O_{10}$
Molecular Weight: 1127.434
Accurate Mass: 1126.690288
Percentage Composition: C 62.86%; H 8.05%; N 14.91%; O 14.19%
Physical Description: No phys. props. reported
Solubility: BERDY SOL: Sol. MeOH, Me_2CO; poorly sol. Et_2O, hexane
UV: [neutral] λ_{max} 219 () (MeOH) (Berdy)

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