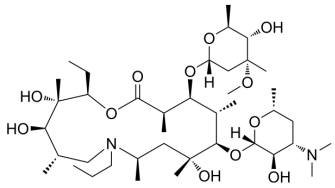
Gamithromycin

Cat. No.:	HY-108365
CAS No.:	145435-72-9
Molecular Formula:	$C_{40}H_{76}N_2O_{12}$
Molecular Weight:	777.04
Target:	Bacterial; Antibiotic
Pathway:	Anti-infection
Storage:	Powder -20°C 3 years 4°C 2 years In solvent -80°C 2 years -20°C 1 year



SOLVENT & SOLUBILITY

In Vitro

DMSO : 100 mg/mL (128.69 mM; Need ultrasonic)

Preparing Stock Solutions	Solvent / Mass / Concentration	1 mg	5 mg	10 mg
	1 mM	1.2869 mL	6.4347 mL	12.8694 mL
	5 mM	0.2574 mL	1.2869 mL	2.5739 mL
	10 mM	0.1287 mL	0.6435 mL	1.2869 mL

Please refer to the solubility information to select the appropriate solvent.

In Vivo

1. Add each solvent one by one: 10% DMSO >> 40% PEG300 >> 5% Tween-80 >> 45% saline
   Solubility: ≥ 2.5 mg/mL (3.22 mM); Clear solution
2. Add each solvent one by one: 10% DMSO >> 90% (20% SBE-β-CD in saline)
   Solubility: 2.5 mg/mL (3.22 mM); Suspended solution; Need ultrasonic
3. Add each solvent one by one: 10% DMSO >> 90% corn oil
   Solubility: ≥ 2.5 mg/mL (3.22 mM); Clear solution

BIOLOGICAL ACTIVITY

Description

Gamithromycin is an antimicrobial agent which can inhibit the growth of MmmSC strains B237 and Tan8 with MICs of 0.00012 and 0.00006 μg/mL, respectively.

IC_{50} & Target

MIC: 0.00012 μg/mL (MmmSC strain B237), 0.00006μg/mL (MmmSC strain Tan8)[1]

In Vitro

The MIC values in serum are significantly lower than those in artificial medium; at an initial inoculum size of 10^6 cfu/mL, these are 64-, 8- and 64-fold lower for gamithromycin, tylosin and tilmicosin, respectively, against MmmSC strain B237 in

	serum compare to artificial medium. A similar pattern emerges for Tan8. Heat-inactivation of serum results in an MIC for gamithromycin that is higher than in either non-treated serum or artificial medium[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
In Vivo	The proportion of foals that recover without the need for a change in treatment is significantly (P<0.048) higher for foals treated with Gamithromycin (GAM) (38 of 40; 95%) or AZM-RIF (39 of 40; 98%) compare to control foals (32 of 41; 78%). The clinical scores, number of abscesses and the abscess scores after 1 and 2 weeks of treatment are significantly lower for foals treated with Gamithromycin (GAM) or AZM-RIF compare to control foals. The WBC count of foals treated with Gamithromycin (GAM) is significantly higher than that of foals treated with AZM-RIF on week 3 of treatment[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

PROTOCOL

Cell Assay [1]	Minimum inhibitory concentrations (MICs) for gamithromycin, tylosin and tilmicosin against MmmSC strains B237 and Tan8 are determined using a macrodilution technique. Equal volumes of MmmSC culture in logarithmic phase are added to each antimicrobial dilution to give an inoculum size of 10^7 cfu/mL, i.e. the intending initial titre for subsequent time-kill assays, in a volume of 4 mL. Cultures are incubated for 24 h at 37°C. At 0 and 24 h time points, samples are removed and serially diluted 10-fold down to 10^{-5}. Aliquots (10 µL) of each dilution are transferred to solid medium; after incubation at 37°C in a humidified atmosphere of 5% carbon dioxide in air for at least 4 days, colonies are counted from the dilution that yields between 30 and 300 colonies per plate. Counts are converted into cfu/mL and MIC is defined as the lowest concentration of antimicrobial that prevents an increase in cfu/mL over 24 h[1]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.
Animal Administration [2]	Foals with ultrasonographic evidence of pulmonary abscesses are randomly assigned in 3 treatment groups: (1)gamithromycin at a dose of 6.0 mg/kg body weight is administered in the semimembranosus/semitendinosus muscles once a week (GAM; n=40); (2) azithromycin at a dose of 10 mg/kg PO once daily in combination with rifampin at a dose of 10 mg/kg PO once daily (AZM-RIF; n=40); and (3) no antimicrobial treatment (controls; n=41). All the foals in each treatment group also receive acetylcysteine at a dose of 10 mg/kg PO a day to provide the same daily manipulation of the foals in each group[2]. MCE has not independently confirmed the accuracy of these methods. They are for reference only.

REFERENCES

[1]. Mitchell JD, et al. In vitro pharmacodynamics of gamithromycin against Mycoplasma mycoides subspecies mycoides Small Colony. Vet J. 2013 Sep;197(3):806-11.

[2]. F. Hildebrand, et al. Efficacy of Gamithromycin for the Treatment of Foals with Mild to Moderate Bronchopneumonia. J Vet Intern Med. 2015 Jan-Feb; 29(1): 333–338.

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