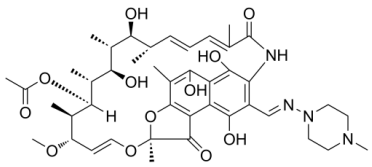
Data Sheet

Product Name:	Rifampicin
Cat. No.:	CS-2261
CAS No.:	13292-46-1
Molecular Formula:	$C_{43}H_{58}N_4O_{12}$
Molecular Weight:	822.94
Target:	Antibiotic; Bacterial; Influenza Virus; Orthopoxvirus
Pathway:	Anti-infection
Solubility:	DMSO : 25 mg/mL (ultrasonic;warming;heat to 80°C)



BIOLOGICAL ACTIVITY:

Rifampicin is a potent and broad spectrum antibiotic against **bacterial** pathogens. Rifampicin has anti-**influenza virus** activities. Rifampicin shows anti-orthopoxvirus activity. ***In Vitro:***Rifampicin (100 microg/mL) can block the functional activity of P-glycoprotein. Rifampicin is not a substract for P-glycoprotein. The mechanism of rifampicin resistance is unassociated with the functional activity of P-glycoprotein[3]. ***In Vivo:***Rifampicin (200, 400 mg/kg) can induce fatty liver at high concentration[1]. Rifampicin (30 mg/kg, i.p.) treatment of S464P biofilms in vivo results in a slight decline, but earlier rebinds in bioluminescence from these catheters compared with the parental signal, whereas rifampicin has no affect on bioluminescence in mice infected with mutant H481Y[2].

PROTOCOL (Extracted from published papers and Only for reference)

Animal Administration: Rifampicin is formulated in saline.[2]Briefly, 1 cm Teflon catheter (14-gauge) carrying 104 cfu S. aureus, either the parental strain Xen 29 or the RifR mutants S464P or H481Y, are implanted subcutaneously in groups of nine mice per strain. One catheter segment is inserted on each side of each animal. Six days after the implantation of the catheters, five mice from each group are treated with rifampicin at 30 mg/kg intraperitoneally in 0.1 mL saline, twice daily for four consecutive days. The remaining four mice in each group are left untreated as controls. At various time points during the infection, the mice are anaesthetized using a constant flow of 1.5% isoflurane from the IVIS® manifold, and imaged using an IVIS® Image System 100 Series. The bioluminescent signals (photons/s) emitted from the mice are analysed using LivingImage® software and plotted over the course of infection. The mice are sacrificed 20 days after infection (11 days after final rifampicin treatment). The catheters are surgically removed and the bacteria are detached by sonication for determination of bacterial burdens on the catheters.

References:

[1]. Piriou A, et al. Fatty liver induced by high doses of rifampicin in the rat: possible relation with an inhibition of RNA polymerases in eukariotic cells. Arch Toxicol Suppl. 1979;(2):333-7.

[2]. Yu J, et al. Monitoring in vivo fitness of rifampicin-resistant Staphylococcus aureus mutants in a mouse biofilm infection model. J Antimicrob Chemother. 2005 Apr;55(4):528-34. Epub 2005 Mar 2.

[3]. Erokhina MV, et al. [In vitro development of rifampicin resistance in the epithelial cells]. Probl Tuberk Bolezn Legk. 2006;(8):58-61.

[4]. Hamzehei M, et al. Inhibition of influenza A virus replication by rifampicin and selenocystamine. J Med Virol. 1980;6(2):169-74.

[5]. Smee DF, et al. A review of compounds exhibiting anti-orthopoxvirus activity in animal models. Antiviral Res. 2003 Jan;57(1-2):41-52.

CAIndexNames:

Rifamycin, 3-[[(4-methyl-1-piperazinyl)imino]methyl]-

SMILES:

OC(C(/C=N/N1CCN(C)CC1)=C(NC(/C(C)=C\C=C\[C@@H]([C@@H]([C@@H](C)[C@H]2O)O)C)=O)C(O)=C3C(O)=C4C)=C3C5=C4O[C@](C)(O/C=C/[C@@H]([C@H]([C@@]([C@@H]2C)([H])OC(C)=O)C)OC)C5=O

Caution: Product has not been fully validated for medical applications. For research use only.

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