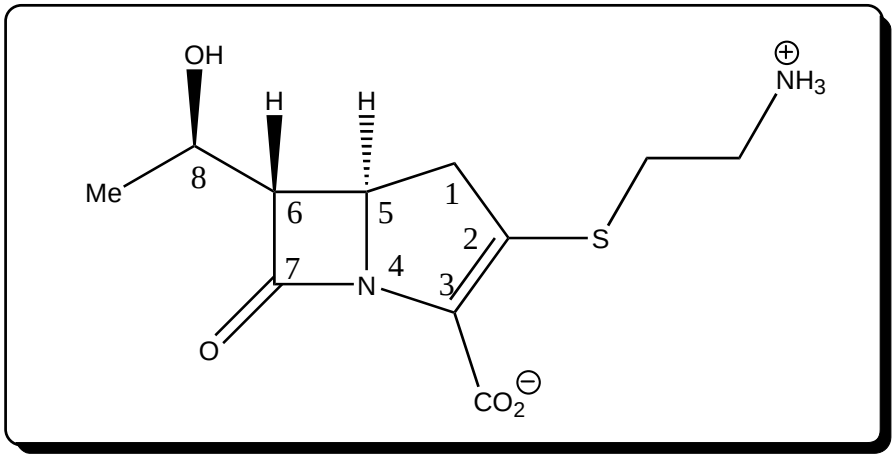
(+) - Thienamycin



3 Stereozentren an C-5, C-6 und C-8

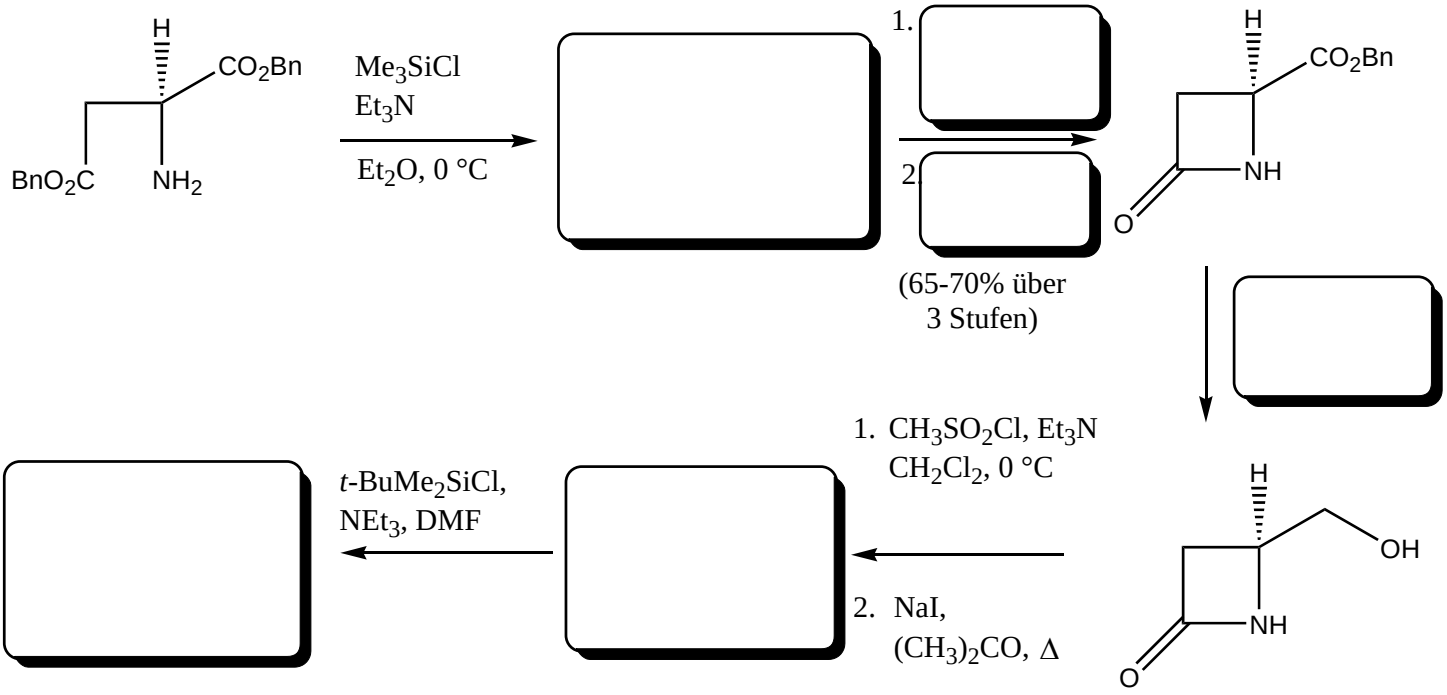
Synthese von Merck (1980)

- isoliert aus Streptomyces cattleya

- zeigt antibakterielle Eigenschaften

- aktiv gegen Pseudomonas
  (Gattung gramnegativer Bakterien)

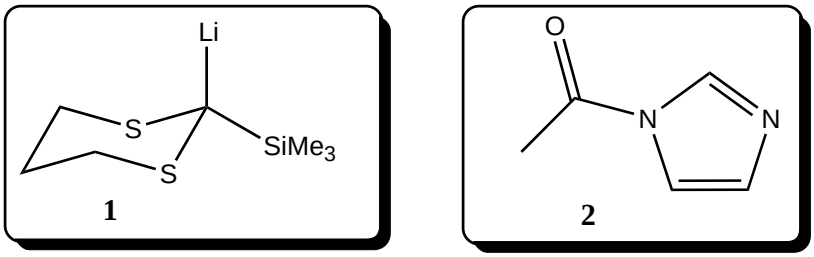
Salzmann, T.N.; Ratcliffe, R.W.; Christensen, B.G.; Bouffard, F.A.; *J. Am. Chem. Soc.* **1980**, 102, 6163

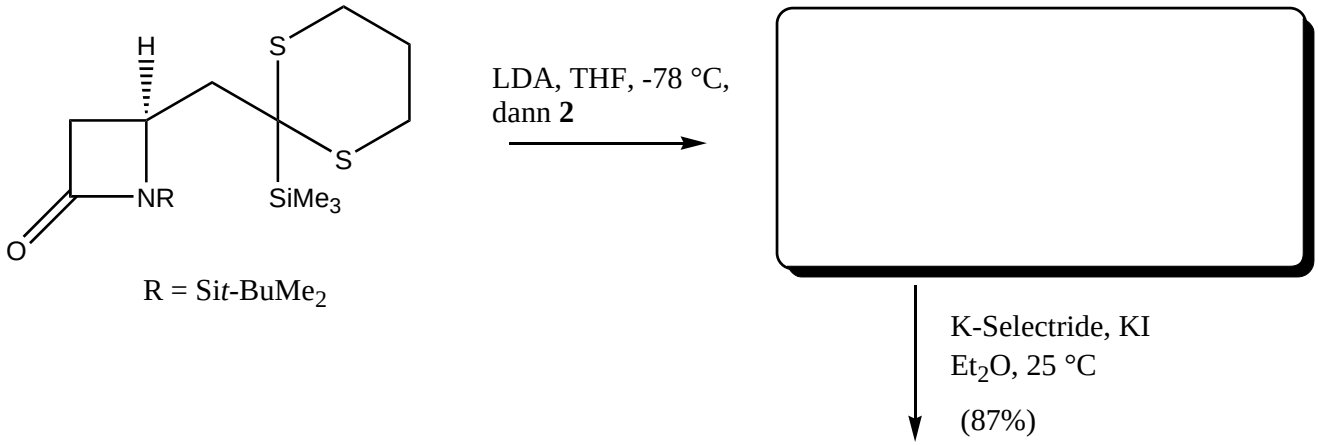


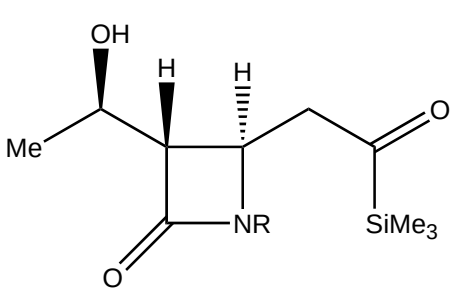
1

THF, -78 °C

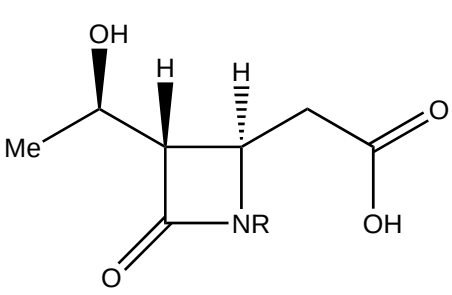
70-80%

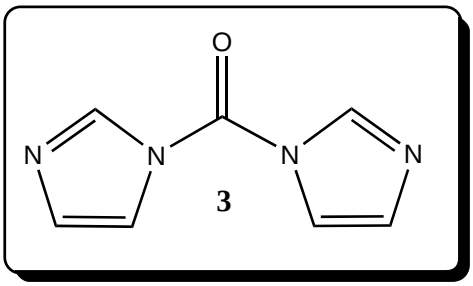






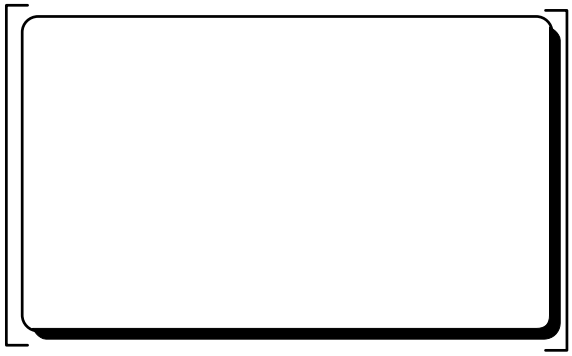
(76%)





3

3,
THF,
25 °C



nicht isoliert

$Mg(O_2CCH_2CO_2pNB)_2$,
THF, 25 °C

(86% über
2 Stufen)

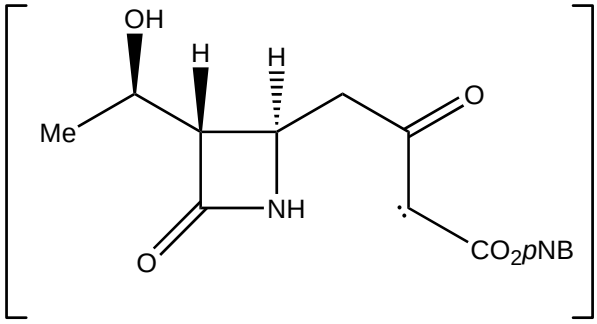
*p*NB = $CH_2C_6H_4$-*p*-NO_2

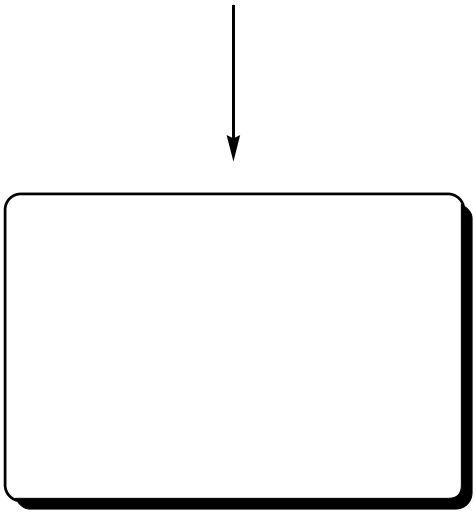
1. HCl, MeOH
2. p-$HO_2CC_6H_4SO_2N_3$, Et_3N,
CH_3CN, 0 - 20 °C

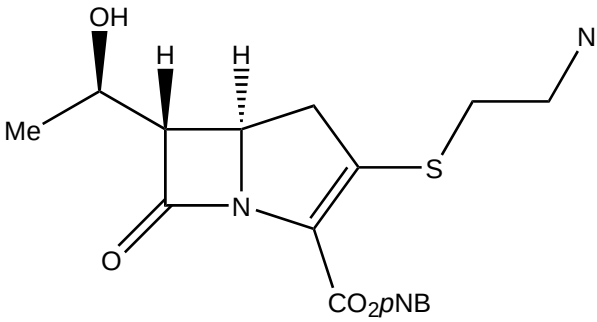
$Rh(OAc)_2$ (kat.)

PhH oder $PhCH_3$

80 °C

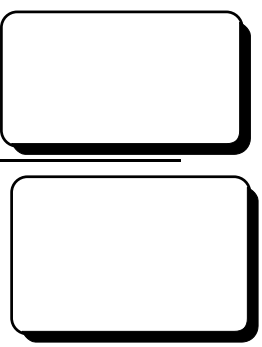


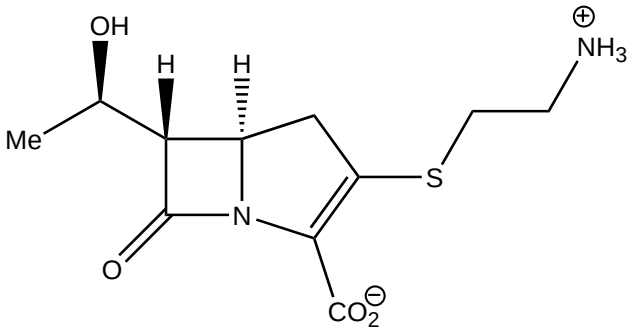




1.

2.





retrosynthetische Schnitte: