NEW STUDIES TOWARDS THE TOTAL SYNTHESIS OF GULMIRECIN B

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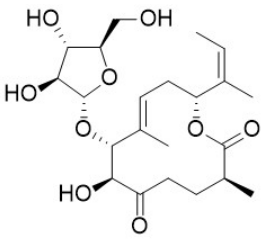
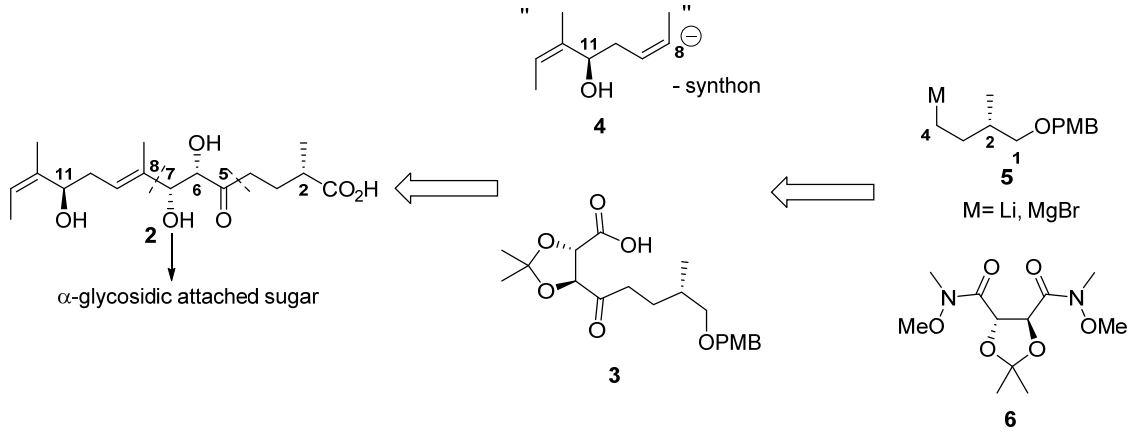


(1)

Gulmirecin B (1) was first isolated from the predatorbacteria *Pyxidicoccus fallax HKI 727* in the river Saale near Jena in Germany by Schieferdecker et al[1]. It shows strong antibiotic activity against staphylococci, including the MRSA, but has no cytotoxic effects on human cells. Thereby it has a great potential as an antibiotic drug. Yet, to date, there is no total chemical synthesis known.

Our retrosynthetic approach is highlighted in the following scheme. The openchain hydroxycarboxylic acid 2 can be disconnected in two fragments 3 and 4, which can be linked via a decarboxylative coupling described by Baran et al[2]. The pmb-protected fragment 3 itself is synthesized from the known bis-weinrebamide 6 and the metalated compound 5 via weinreb-ketone synthesis.



Here we focus on the asymmetric synthesis of fragment 5 via four different approaches. Installation of the methylated stereogenic center in 5 was achieved with a Feringa-Minnaard methylation[3] as the key step. Subsequently, the metalated chiral fragment 5 is a suitable nucleophile for coupling with weinreb-amide precursor 6 to furnish key fragment 3.

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[1] S. Schieferdecker, S. König, C. Weigel, H.-M. Dahse, O. Werz, M. Nett, *Chemistry* **2014**, *20*, 15933.

[2] J. T. Edwards, R. R. Merchant, K. S. McClymont, K. W. Knouse, T. Qin, L. R. Malins, B. Vokits, S. A. Shaw, D.-H. Bao, F.-L. Wei et al., *Nature* **2017**, *545*, 213.

[3] F. López, A. J. Minnaard, B. L. Feringa, *Accounts of chemical research* **2007**, *40*, 179.