Synthetic Study of a Polyol Unit of Ampohtericin B Using Organocatalysts

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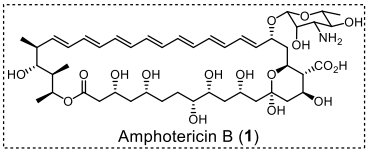
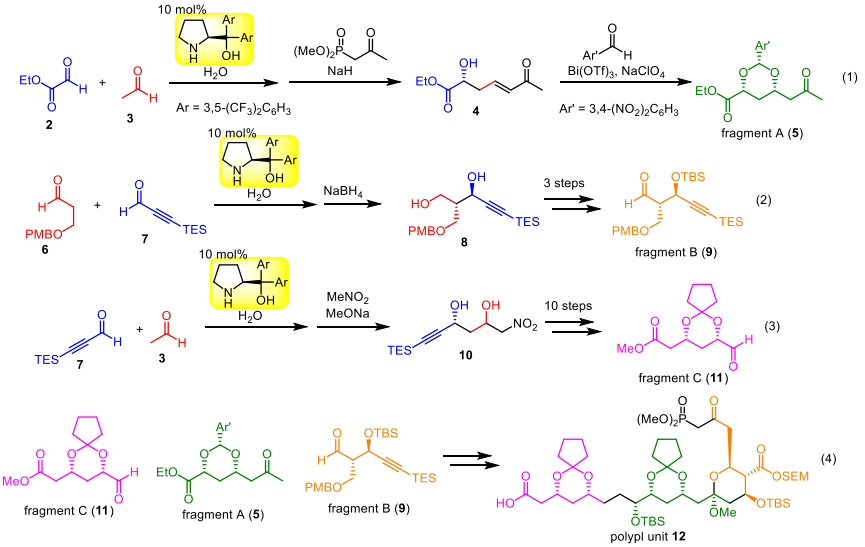


Amphotericin B (**1**) is a natural product isolated from *Streptomyces nodosus* and containing polyene and polyol units in 38-membered macrolide. In this presentation, authors established the method for the synthesis of polyol unit of Amphotericin B through the synthesis of three fragments using organocatalyst-mediated asymmetric aldol reaction and 1,3-asymmetric induction developed by our group as key steps.

Asymmetric aldol reaction of ethyl glyoxylate (**2**) and acetaldehyde (**3**) catalyzed by diarylprorinol[1a] followed by Horner-Wadsworth-Emmons reaction afforded compound **4**. $Bi(OTf)_3$ and $NaClO_4$ mediated 1,3-asymmetric induction with 3,4-dinitrobenzaldehyde[2] gave 1,3-*syn*-diol fragment A (**5**) (eq. 1). Diarylprolinol mediated asymmetric aldol reaction of alkoxyaldehyde **6** and alkynylaldehyde **7**[1b] followed by reduction gave diol **8**. After 3 steps transformations, fragment B (**9**) was obtained (eq. 2). Asymmetric aldol reaction of alkynylaldehyde **7** and acetaldehyde **3**[1b] followed by Henry reaction afforded nitrodiol **10**. After several transformations, 1,3-*syn*-diol fragment C (**11**) was synthesized[3] (eq. 3). After coupling reactions of these three fragments and several transformations, we synthesized polyol unit of Amphotericin B **12** (eq. 4).



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