

Abstract

Quentin, Florian – Studies on the Total Synthesis of (–)-Curvicollide C

Key words: total synthesis, natural product, curvicollides.

The dissertation is concerned with studies on the total synthesis of curvicollide C. This polyketide type natural product with unknown configuration has been isolated 2004 from the working group of Gloer from an organic extract of *Podospora curvicolla*. This mycoparasitic organism has been obtained from the surface of a sclerotium of the mold fungus *Aspergillus flavus* that had been buried in soil in an Illinois cornfield.

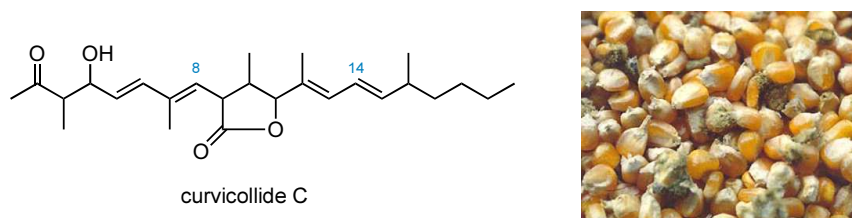


Figure: Curvicollide C and the mold fungus *aspergillus flavus* on corn.

The herein presented sequences include eight steps for both all-*trans* configured C8–C14 fragments of curvicollide C with an overall yield of 51% respectively 35% starting from the readily accessible achiral allyl vinyl ether.

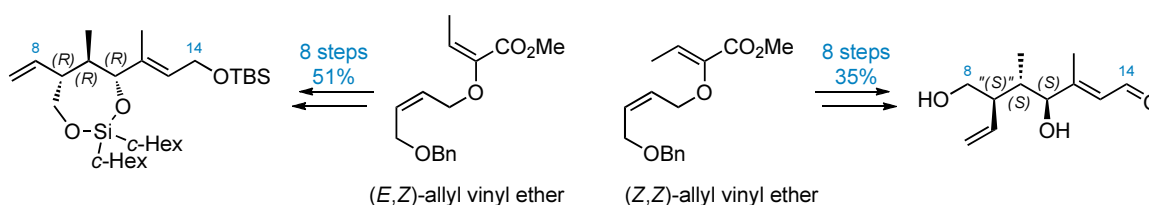


Figure: Synthesized C8–C14-fragments with all-*trans*-configuration.

A catalytic asymmetric Gosteli–Claisen rearrangement, the addition of a vinyl lithium reagent to an α -chiral aldehyde and a protection of a diol as 1,3-dioxasilapane are the key steps for the (*R,R,R*)-configured core fragment. The key steps for the (*S,S,S*)-configured isomer are also a catalytic asymmetric Gosteli–Claisen rearrangement, the addition of a vinyl lithium reagent as well as a chemoselective oxidation of a triol. Furthermore this work gives insights into the attempted connection of the C8–C14 fragment with the C1–C7 fragment by employing cross metathesis or selective double bond oxidation.

Picture taken from: <http://www.mgel.msstate.edu/images/page/aspergillus.jpg> (10.05.2014).