

CHIRAL ROUTES TO NATURALLY OCCURRING OXACYCLIC COMPOUNDS

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For the purpose of developing an efficient chiral route to the substituted tetrahydrofuran systems which constitute the characteristic subunits of various oxacyclic compounds, we selected (6*S*,7*S*,9*R*,10*R*)-6,9-epoxynonadec-18-ene-7,10-diol (**7**), a marine natural product, and (+)-citroviral (**12**), a mycotoxin metabolite, as a target molecule.

The synthesis of **7** has been accomplished using (5*S*)-1,2,3,4-diepoxybutane (**1**) as a chiral starting material. The C₂-symmetrical nature of **1** allowed easy access of the key γ,δ -unsaturated alcohol **2** which was converted to the marine product **7** by the following three major manipulations: (1) stereoselective electrophilic cyclization (**2** $\rightarrow$ **3**); (2) chemoselective diimide reduction (**3** $\rightarrow$ **4**); (3) chelation controlled Grignard reaction (**5** $\rightarrow$ **6**).

As for the synthesis of (+)-citroviral (**12**), the synthesis was started by the newly developed asymmetric hydroxylation of the tiglic acid ester **8** to **9**. Conversion of **9** into the epoxide **10** followed by treatment with 50% aqueous trifluoroacetic acid stereoselectively gave the tetrahydrofuran **11** which was transformed into (+)-citroviral (**12**) by DIBAL reduction followed by regioselective Swern oxidation.

