

Total synthesis of plakortide E and biomimetic synthesis of plakortone B

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Abstrak

In his thesis, Xiaoyu Sun conducts the first total synthesis of all possible stereoisomers of plakortide E and also confirms the absolute configuration of natural plakortide E. Xiaoyu Sun subsequently converts plakortide E methyl ester to plakortone B in a biomimetic conversion. Construction and functionalization of cyclic peroxides are notoriously difficult due to the very low O-O bond dissociation energy. Plakortide E is isolated from the Jamaican marine sponge *Plakortis halichondrioides* and contains a five-membered peroxide ring, with oxygen atoms linked to tertiary C4 and C6 centers. The methodology used for synthesizing highly substituted cyclic peroxides is novel and useful, and not only extends the field of Pd-catalyzed reactions, but also provides a convenient synthetic approach for the preparation of the 1,2-dioxolanes series. Plakortide E and plakortone B are bioactive, which means that the synthetic studies on them and their analogs are pivotal in drug discovery.