THE SYNTHESIS OF DIMERIC MACROLIDES, (±)-PYRENOPHORIN AND (±)-COLLETALLOL

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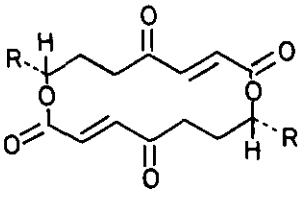
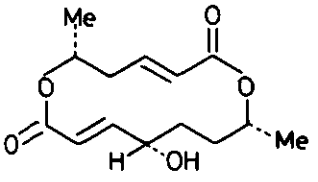
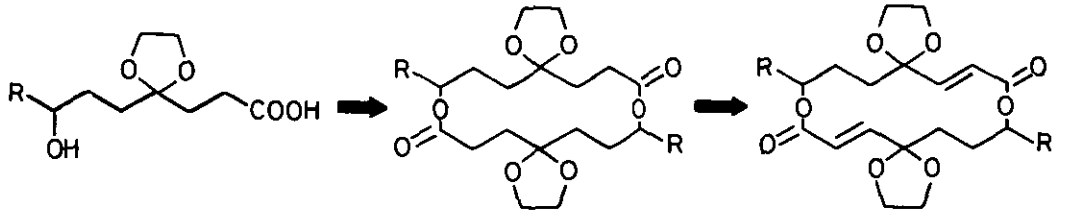
We will describe the synthesis of macrocyclic antibiotics, pyrenophorin(1) and colletallol(3) involving the use of the phosphoric anhydrides of ω-hydroxy acids in the presence of DMAP[1] in the inter- and subsequent intramolecular cyclodimerization. The activation of carboxylic acid is important chemical operations. In particular, synthesis of naturally occurring macrolides very often requires a selective activation of the carbonyl group with respect to hydroxy group. The use of phosphoric anhydride for this purpose is obviously useful especially in the case of α,β-saturated carboxylic acids to give the corresponding diolides in good yield. Selenenylation of diolides followed by oxidative elimination afforded the desired trans α,β-unsaturated lactones. None of the stereoisimers other than trans compound were observed among the reaction prosucts. Application of this method to the synthesis of (±)-vermiculine(2) is currently in progress.



(1) Pyrenophorin
R=CH_3
(2) Vermicurine
R=CH_2COCH_3



(3) Colletallol



1. T. Kaiho, S. Masamune, and T. Toyoda, J. Org. Chem., 47, 1612(1982).