

[Tetrahedron, **52**, 14507-14514 (1996)]

[Lab. of Medicinal Chemistry]

Synthesis of C₂-Symmetric (*S,S*)-1,4-Dibenzyl-DTPA and 1,4-*meso*-Dibenzyl-DTPA via Chiral Diamines.

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We have described the novel routes to C₂-symmetric (*S,S*)-1,4-dibenzyl-DTPA and 1,4-*meso*-dibenzyl-DTPA starting from readily available chiral phenylalaninols without racemization. These nine steps synthesis include only one column chromatography purification process and the crude intermediates were generally used in the next reaction without further purification. These synthetic methods should have some further utility in introduction of variety of substituents at the methylene moieties of diethylenetriamine derivatives, stereoselectively, which are of great importance in the stereoselective reactions as chiral auxiliaries.

[Synth. Commun., **26**, 2511-2522 (1996)]

[Lab. of Medicinal Chemistry]

Synthesis of Enantiomerically Pure 1-(*R*)- and 1-(*S*)-Hydroxymethyl-DTPA Penta-*t*-butyl Esters via Chiral Aminoalcohols .

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Enantiomerically pure 1-(*R*)- and 1-(*S*)-hydroxymethyl-DTPA (diethylenetriamine pentaacetic acid) penta-*t*-butyl esters, chiral synthones for functionalized DTPA derivatives, have been synthesized in six steps from N-Boc-O-benzyl-L-serine and N-Boc-O-benzyl-D-serine, respectively, without racemization. The optical purity analysis of 1-(*R*)- and 1-(*S*)-hydroxymethyl-DTPA penta-*t*-butyl esters as the (*S*)-(+)- α -Methoxy- α -(trifluoromethyl)phenylacetates (MTPA esters) on a ¹⁹F-NMR showed a single peak in each without any detectable opposite isomer (> 97 % ee). Use of the coupling reactions of mesylate intermediates and large excess ethylenediamine was found not only to be efficient but also prevented epimerization of the chiral center.

[Heterocycles, **42**, 31-34 (1996)]

[Lab. of Medicinal Chemistry]

Synthesis and DNA Photo-cleaving Activity of Novel Heterocyclic N-Oxide - Acridine Hybrid Molecules.

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The novel DNA photo-cleaver consisting of 3,7-dimethoxymethyl-1,9-dimethylpyrimido[5,4-*g*]-pteridine-2,4,6,8(1*H*,3*H*,7*H*,9*H*)-tetrone *N*-oxide, which is an efficient photochemical generator of hydroxyl radicals, an acridine intercalator, and an amide-type methylene linker was designed and synthesized. The preliminary DNA strand-breakage study of the hybrid compounds demonstrated that the DNA photo-cleaving activity of the parent heterocyclic *N*-oxide (2 μ M) increased by linking with the acridine intercalator. An efficient single-strand breakage of Form I DNA was observed as evidently by the production of Form II DNA with concentration dependence of the hybrid molecules.