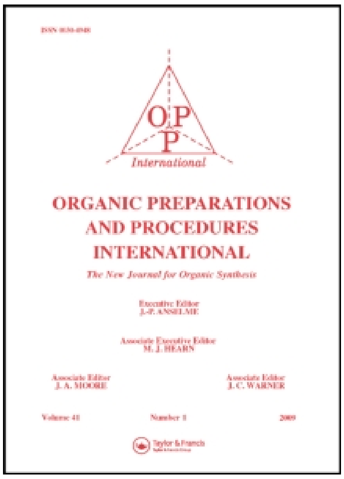

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A CONVENIENT SYNTHESIS OF (2S)-2-AMINO-3-PHENYLPROPANOL

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and the reaction mixture was poured onto crushed ice (500 g). The precipitated solid was collected, washed with water and sucked dry. Recrystallization from toluene afforded 200 g (85%) of pure 3-bromo-4-chloronitrobenzene, mp. 62°, lit.[2] 61°.

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A CONVENIENT SYNTHESIS OF (2S)-2-AMINO-3-PHENYLPROPANOL

Submitted by
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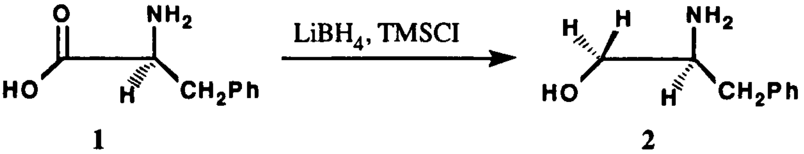
(2S)-2-Amino-3-phenylpropanol (**2**) is the precursor to a chiral auxiliary introduced by Evans and co-workers.[1] It is synthesized from L-phenylalanine (**1**) by reduction with borane•dimethyl sulfide.[2] This reaction is exothermic and as Gaze and Evans[2] note "the potential vigor of this exotherm cannot be overemphasized". In addition, dimethyl sulfide (stench) is produced as a side-product. Since we recently had occasion to synthesize the title compound in our studies related to the asymmetric synthesis of unusual amino acids[3] and needed rather large amounts of it, we sought a safer alternative procedure. We have adopted a procedure developed by Giannis and Sanhoff[4] for the reduction of valine and proline and found that reduction of L-phenylalanine (**1**) with lithium borohydride in the presence of chlorotrimethylsilane[4] provides the desired compound **2** in 83% yield. The merits of this procedure are its relative ease of execution and safety. In view of the immense utility of chiral auxiliaries of Evans and co-workers in organic synthesis,[5] we expect our procedure to be very useful.



EXPERIMENTAL SECTION

(2S)-2-Amino-3-phenylpropanol.- To a two liter, three-necked round bottom flask, equipped with a mechanical stirrer, reflux condenser and addition funnel, 600 mL (1.2 mole, 2 eq) of $LiBH_4$ (2 M solution in THF) was transferred via a double-ended needle. To this stirred solution, 304 mL (2.4 moles, 4 eq) of chlorotrimethylsilane was added dropwise over 1.5 hr under an atmosphere of argon. A total of 100 g (0.6 mole, 1 eq) of L-phenylalanine (**1**) was added in small portions over a period of 4 hrs by means of a powder funnel. The reaction mixture was stirred at ambient temperature for 24 hrs. At the end of this time, the reaction was quenched by the careful addition of 600 mL of methanol, followed by 450 mL of 20% potassium hydroxide solution. After removal of methanol in vacuo, 600 mL of water was added. The solution was extracted with chloroform (3 x 300 mL), washed once with 50 mL of water, dried (Na_2SO_4) and filtered. Removal of solvent in vacuo left 95 g of a colorless solid. Recrystallization from 190 mL of ethyl acetate gave 75 g. (83%) of pure L-phenylalaninol (**2**), mp. 85-86°, lit.[2] mp. 88.5-91°, $[\alpha]_D^{23}$= -23.5° (c 1.0, EtOH), lit.[2] $[\alpha]_D^{23}$= -24.7° (c 1.0, EtOH). CIMS: m/e = =152 (M^++1,100%); ^1H NMR (250 MHz, $CDCl_3$): δ 1.98 (br s, 3H, NH_2OH), 2.52 (dd, J = 13.4, 8.6 Hz, 1H, HCH C_6H_5), 2.79 (dd, J = 13.4, 5.1 Hz, 1H, $HCHC_6H_5$), 3.06-3.15 (m, 1H, $CHNH_2$), 3.39 (dd, J = 10.6, 7.3 Hz, 1H, HCHOH), 3.64 (dd, J = 10.7, 3.8 Hz, 1H, HCHOH), 7.17-7.34 (m, 5H, ArH). IR (solution in CH_2Cl_2): 3620, 3039, 3010, 2927, 1494, 1453, 1035 cm^{-1}.

Anal. Calcd. for $C_9H_{13}NO$: C, 71.48; H, 8.66. Found: C, 71.75; H, 8.85

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