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(+)-(*1R*)-N[1]-{[(*1R,1S*)-2-Oxocyclohexyl]methyl}-1-phenyl-1-ethanaminium Chloride

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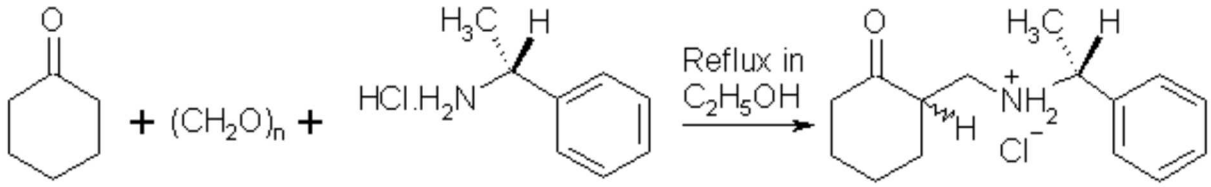

The Mannich bases of cyclohexanone with benzylamine and 3,4-methylenedioxybenzylamine hydrochlorides have been prepared in moderate yields using aqueous formaldehyde solution [1]. We report now the synthesis of an analogous product from (R)-(+)-1-phenylethylamine. A mixture of cyclohexanone (2.00 g, 0.02 mol), paraformaldehyde (1.20 g, 0.04 mol) and (+)-(*R*)-1-phenylethylamine hydrochloride (3.18 g, 0.02 mol) was refluxed under stirring in anhydrous ethanol (15 ml) for 5 h (TLC monitoring). The reaction mixture gradually turned into a solution. The solvent was then removed under reduced pressure and the residue was triturated with ice-cooled acetone (20 ml). The separated crystals were filtered, washed with cold acetone, recrystallized from *n*-butanol and air-dried. Yield: 3.45 g (60 %) of the title compound as colorless crystals. TLC homogeneous, optically active mixture of (*R,R*)- and (*R,S*)-diastereomers (TLC: silica gel Merck GF_{254} Al-sheets, eluted by chloroform-ethanol 3:1).

Mp. 175-176 ºC (*n*-butanol); $[a]_D$ = +10.0° (*c* = 1.00, CH_3OH).

^1H NMR (300 MHz, d_6-DMSO): 1.12-1.30 (m, 1H), 1.40-1.60 (m, 2H), 1.62 (d, *J* = 6.7 Hz, CH_3), 1.65-1.79 (m, 1H), 1.87-2.03 (m, 1H), 2.12-2.46 (m, 4H), 2.85-3.00 (m, 1H), 3.00-3.13 (m, 1H), 4.36 (m,1H, CH_3CH), 7.33-7.47 (m, $3H_{arom.}$), 7.60-7.69 (m, $2H_{arom.}$), 9.46 and 9.67 (br. d, N^+H_2).

FT IR (neat): 3100-3500, 3030-3080, 3027, 2930, 2859, 1705 (C=O), 1493, 1449, 1368, 1352, 1312, 1196, 1127, 1076, 762, 702.

FAB MS [glycerol; *m/z* (%)]: 499 (6; $2M + 2H^+ + Cl^-$), *232* (100; $MH^+ = C_{15}H_{22}NO^+$), 155 (5), 134 (5), 105 (25), 55 (3).

Anal. calcd. for $C_{15}H_{22}NOCl$ (267.80): C 67.28, H 8.28, N 5.23, Cl 13.24; found C 66.97, H 8.22 , N 5.23, Cl 13.46.

Reference

1. Mannich C.; Hieronimus O. *Ber. Dtsch. Chem. Ges.* **1942**, *75*, 49-53.

Sample Availability: Available from the authors and from MDPI.