SYNTHESIS OF AZA STEROID ANALOGS

B. B. Aleksandrov, V. S. Shklyaev, and Yu. V. Shklyaev

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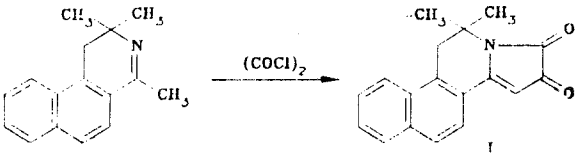
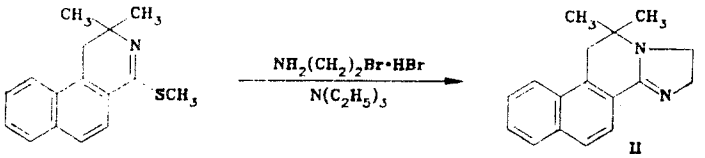
It has been previously shown that gona-16,17-dioxo-13-aza-1,3,5(10),6,8(9),14-hexaenes are formed in the reaction of 1,2-dihydro-4-methylbenzo[f]isoquinoline with oxalyl chloride [1]. We have established that the reaction between oxalyl chloride and 1,2-dihydro-2,2,4-trimethylbenzo[f]isoquinoline also leads to a similar result.



I

Considering the potential biological activity of compounds that have the aza steroid skeleton we studied the reaction of 1,2-dihydro-4-methylthio-2,2-dimethylbenzo[f]isoquinoline with β-bromoethylamine. It was found that gona-12,12-dimethyl-13,15-diaza-1,3,5(10),6,8,(9),14-diaza-1,3,5(10),6,8(9),14-hexaene (II) is formed in the case of heating in alcohol in the presence of triethylamine.



II

Thus 1.27 g (0.01 mole) of oxalyl chloride was added to a solution of 2.23 g (0.01 mole) of 1,2-dihydro-2,2,4-trimethylbenzo[f]isoquinoline in 50 ml of benzene, and the mixture was refluxed for 3.5 h. The solvent was then removed by distillation, and the residue was crystallized from isopropyl alcohol to give 1.85 g (67%) of I with mp 193-195°C. PMR spectrum ($CDCl_3$): 1.53 (6H, s, $2CH_3$), 3.17 (2H, s, CH_2), 5.77 (1H, s, CH), 7.33-8.10 ppm (6H, m, H_{arom}). IR spectrum (KBr): 1660 cm^{-1} (C=O).

A 2.05-g (0.01 mole) sample of 2-bromoethylamine hydrobromide and 5 ml of dry triethylamine were added to a solution of 2.55 g (0.01 mole) of 1,2-dihydro-4-methylthio-2,2-dimethylbenzo[f]isoquinoline in 50 ml of absolute alcohol, and the mixture was refluxed for 8 h. The precipitated triethylamine hydrobromide was removed by filtration, the solvent was removed, and the residue was crystallized from isopropyl alcohol to give 1.5 g (60%) of II with mp 258-260°C. PMR spectrum (d_6-DMSO): 1.43 (6H, s, 2CH3), 2.49 (2H, s, 11-H), 2.60 (2H, d, CH_2, 16-H), 2.69 (2H, d, CH_2, 17-H), 7.64-8.32 ppm (6H, m, arom.). Mass spectrum, m/z (I_{rel}, %): 250 (5), M^+, 248 (80) $[M - 2H]^+$, 233 (100) $[M - 2H - 2CH_3]^+$, 218 (10) $[M - 2H - 2CH_3]^+$, 207 (10) $[M - 2H - CH_3 - C_2H_2]^+$, 192 (10) $[M - 2H - 2CH_3 - C_2H_2]^+$, 178 (20) $[M - 2H - 2CH_3 - C_2H_2]^+$.

LITERATURE CITED

1. S. V. Kessar, Paramjit Singh, and S. K. Sharma, *Tetrahedron Lett.*, **23**, 4179 (1982).
2. B. B. Aleksandrov, V. S. Shklyaev, and Yu. V. Shklyaev, *Khim. Geterotsikl. Soedin.* (1991, in press).

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