washed successively (MeOH, hot H_2O). It was recrystallized from DMF–EtOH; yield 3.5 g (70%) as orange-red needles, mp 193–194°. *Anal.* ($C_{16}H_{15}N_5O$) C, H, N.

1-Thiocarbamoyl-3,5-diphenyl-4-phenylazopyrazole.—Thiosemicarbazide hydrochloride (2.5 g, 0.02 mole) was dissolved in H_2O (30 ml) and mixed with 1,3-diphenyl-2-phenylhydrazono-1,2,3-propanetrione (6.5 g, 0.02 mole) which is in turn prepared by coupling of 1,3-diphenyl-1,3-propanedione (4.5 g, 0.02 mole) with diazotized $PhNH_2$ (2.0 g, 0.02 mole) in absolute EtOH (20 ml). The mixture was allowed to condense at moderate temperature on a steam bath for 1 hr, and then kept for 2 hr at room temperature. It separated and was recrystallized (EtOH); yield 6.3 g (85%) as pale yellow needles, mp 187–188°. *Anal.* ($C_{22}H_{19}N_6OS$) N, S.

Similarly several 1-thiocarbamoyl-3,5-diphenyl-4-arylazopyrazoles were obtained; see Table II. Yields of the products depend upon the pH of the reaction medium. Best results were obtained at pH 4–5.

Acknowledgment. We wish to thank Professor W. U. Malik, Head of the Chemistry Department, for providing the necessary facilities for carrying out the work and the C.S.I.R., New Delhi (India), for a Junior Research Fellowship (held by R. A. S.).

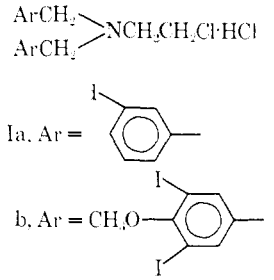
Some Iodine Derivatives of Dibenamine

HERBERT A. FRIEDMAN AND GEORGE B. KOELLE

Department of Pharmacology, University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania 19104

Received June 6, 1969

Though many derivatives of Dibenamine have been synthesized and evaluated biologically as adrenergic blocking agents, very few containing iodine have been prepared. We report here the preparation of two such compounds of potential interest. It is expected that the iodine atoms will confer sufficient electron density on the compounds to allow their localization in tissue by means of electron microscopy.



Experimental Section[1]

N,N-Bis(3-iodobenzyl)-2-chloroethylamine Hydrochloride (Ia).—*m*-Iodobenzyl bromide[2] (16.5 g, 0.056 mole) and 2-aminoethanol (3.4 g, 0.056 mole) were combined and heated on a steam bath for 12.5 hr. The product was dissolved in $CHCl_3$ and the solution was extracted with aqueous NaOH (pH 9) followed by dilute sodium thiosulfate. The $CHCl_3$ layer was dried ($MgSO_4$), the solvent was evaporated to 25 ml, and $SOCl_2$ (4.0 ml) was added. After stirring overnight at room temperature the solvent was removed under reduced pressure. The residue was dissolved in MeOH which was then evaporated *in vacuo*. Upon standing for a few days the mixture became crystalline. The crystals were triturated with C_6H_6 containing a slight amount of $CHCl_3$, yield 6.5 g. The compound was recrystallized from a minimum amount of $CHCl_3$ to which C_6H_6 was added until the turbidity point when hot; yield 5.1 g (33%). The melting point of the compound was indefinite and could not be used for characterization purposes. *Anal.* ($C_{16}H_{15}Cl_2I_2N$) C, H, N.

2-[N,N-Bis(3,5-diiodo-4-methoxybenzyl)]ethanolamine (II). 3,5-Diiodo-4-methoxybenzyl chloride[3] (4.4 g, 0.01 mole) and 2-aminoethanol (0.61 g, 0.01 mole) were allowed to react at 40°. The reaction proceeded over 3 hr during which time the temperature was gradually raised to 120°. The product was partitioned between C_6H_6 and 25% NaOH. The C_6H_6 layer was extracted with aqueous sodium thiosulfate and dried ($MgSO_4$). Removal of the C_6H_6 under reduced pressure left a brown residue which was triturated with EtOAc to yield 1.3 g (16%) of colorless crystals, mp 151–152°. *Anal.* ($C_{18}H_{19}I_4NO_3$) C, H, N.

N,N-Bis(3,5-diiodo-4-methoxybenzyl)-2-chloroethylamine Hydrochloride (Ib). Compound II (1.3 g, 1.6 mmoles) was dissolved in 15 ml of $SOCl_2$ and the solution was refluxed for 4 hr. Excess solvent was evaporated under reduced pressure. The residue was dissolved in a minimum of $CHCl_3$ and was chromatographed on silica gel with $CHCl_3$. The material separated into a slow-moving brown band and a rapidly moving broad yellow band. The eluent containing the latter band was collected and the solvent was evaporated. The compound was recrystallized from ether to yield 0.60 g (43%) of colorless crystals, mp 120–121°. *Anal.* Calcd for $C_{18}H_{18}Cl_2I_4NO_2 \cdot 0.25C_4H_{10}O$: C, 25.98; H, 2.47; N, 1.59. Found: C, 26.31; H, 2.21; N, 1.68.

Acknowledgment.—The authors are grateful to the School of Medicine for help from a general Research Support Grant.

(1) Melting points were taken on a Thomas-Hoover capillary melting point apparatus and are uncorrected. Microanalyses were performed by Galbraith Laboratories, Inc. Knoxville, Tenn. Where analyses are indicated only by symbols of the elements or functions, analytical results obtained for those elements or functions were within ±0.4% of the theoretical values.

(2) L. B. Rapp and I. I. Kuz'menko, *Ukr. Khim. Zh.*, **29**, 734 (1963); *Chem. Abstr.*, **59**, 12666*g* (1963).

(3) J. H. Wilkinson, *J. Chem. Soc.*, 2370 (1949).

1-Methyl-4-[5(3)-methyl-3(5)-pyrazolyl]-quinolinium Iodide. An Analog of the Hypoglycemic Pyrazolylpyridinium Salts

RICHARD P. WILLIAMS, VICTOR J. BAUER, AND S. R. SAFIR

Organic Chemical Research Section, Lederle Laboratories, A Division of American Cyanamid Company, Pearl River, New York 10965

Received June 30, 1969

A number of 4-[3(5)-pyrazolyl]pyridinium salts (**1**), for instance, have been found to display interesting hypoglycemic activity in laboratory animals.[1] To determine whether this activity extends to the related quinolinium salt series, 1-methyl-4-[5(3)-methyl-3(5)-pyrazolyl]quinolinium iodide (**2**) was synthesized in two steps from the known[2] 4-acetoacetylquinoline. Compound **2**, when administered orally to male mice (Carworth Farms, 25–30 g) in saline solution at a dose of 1.5–3.0 mmoles/kg failed to depress blood sugar levels significantly below untreated controls when estimated by the method of Hoffman[3] as adapted to the Technicon Auto-Analyzer.[4]

(1) V. J. Baner, H. P. Dalalian, W. J. Fanshawe, S. R. Safir, E. C. Tocos, and C. R. Boshart, *J. Med. Chem.*, **11**, 981 (1968).

(2) H. Weidel, *Monatsh.*, **17**, 402 (1896).

(3) W. S. Hoffman, *J. Biol. Chem.*, **120**, 51 (1937).

(4) Testing results were supplied by Drs. D. A. Blickens and S. J. Rigg of the Metabolic Chemotherapy Department of these laboratories.