hydride. The mixture was refluxed 30 min., cooled, and filtered after standing. The crystals were recrystallized repeatedly from methanol; m.p. 256°. They were slightly soluble in water, more soluble in alcohol. The water solution was cherry red. The alcohol solution was deep blue. The absorption spectra of these and other compounds are to be presented in a separate paper. Even though the analytical sample was dried 1 hr. at 95° at 0.05 mm. the analysis indicated that the compound was a monohydrate.

Anal. Calcd. for $C_{22}H_{25}IN_2O$: C, 57.39; H, 5.47; I, 27.57. Found: C, 57.06; H, 5.10; I, 27.43, 27.30. (Other samples: C, 57.45, 56.99, 57.68, 57.93; H, 4.96, 5.69, 5.48, 5.74.)

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Quaternary Salts Similar to 4-(*p*-Dimethylaminostyryl)quinoline Methiodide[1]

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Received January 14, 1957

Although 4-(*p*-dimethylaminostyryl)quinoline[2,3] was more potent than 4-(*p*-dimethylaminostyryl)-quinoline methiodide[4] in causing regression of Lymphoma 8 tumors in rats,[5] the latter was less toxic. For this reason a number of similar quaternary salts have been prepared for testing against this and other tumors.

Preliminary tests by Dr. Margaret Reed Lewis, Dr. Boland Hughes, and Aubrey L. Bates at the Wistar Institute of Anatomy and Biology[6] indicate that 4-(*p*-dimethylaminostyryl)quinoline propiodide shares the activity of the methiodide and ethiodide in producing regression of Lymphoma 8 tumors in rats, and that 2-(*p*-fluorostyryl)quinoline methiodide is inactive under the same conditions. Tests on the other compounds are not yet complete.

EXPERIMENTAL

Most of the compounds were prepared by adding a mixture of equimolar amounts of the *p*-aminobenzaldehyde and the lepidine methiodide (or propiodide) to boiling acetic anhydride and refluxing 30 min. (Method A). After cooling, the crystals were recovered and recrystallized from methanol. A few of the preparations were carried out by refluxing the reactants 4 hr. in methanol with piperidine catalyst (Method B). The dialkylamino compounds were purple-black, except the brown-black 4-(*p*-dimethylaminostyryl)-3-methylquinoline. The *4-(p-acetamidostyryl)quinoline methiodide* was orange and the *p*-fluorostyryl compounds were tan. The compounds melted with decomposition. The melting points were determined by rapid heating.

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TABLE I

QUATERNARY SALTS

Compound	Method	Yield, %	M.P., °C.	Analyses[a] Calcd. C	Calcd. H	Found C	Found H
Methiodides							
4-(*p*-Dimethylaminostyryl)-6-iodoquinoline[b]	A	21	307–308		[c]		
4-(*p*-Dimethylaminostyryl)-3-methylquinoline	A	72	284–285	58.61	5.39	58.75, 58.85	5.25, 5.23
4-(*p*-Dimethylaminostyryl)-8-methylquinoline	A	68	272	58.61	5.39	58.62, 58.36	5.36, 5.28
4-(*p*-Dimethylaminostyryl)-8-phenylquinoline	A	15	231–232	63.42	5.12	63.44, 63.28	5.05, 5.21
4-(*p*-Dimethylaminostyryl)-5,6-benzoquinoline[d,e]	B	36	241	59.51[f]	5.20	59.38, 59.55	4.97, 5.07
2-(*p*-Dimethylaminostyryl)-5,6-benzoquinoline[d]	A	39	253	59.51	5.20	59.33, 59.14	5.01, 4.90
4-(*p*-Acetamidostyryl)quinoline[g]	B	45	320	55.82	4.45[h]	55.70, 55.81	4.55, 4.53
4-(*p*-Nitrostyryl)quinoline	B	79	260	51.69	3.62	51.76, 51.55	4.18, 4.12
4-(*p*-Fluorostyryl)quinoline	B	4	237		[i]		
2-(*p*-Fluorostyryl)quinoline	B	50	249	55.25	3.84	55.16, 54.98	4.00, 3.98
2-(*p*-Dimethylaminostyryl)-5-methylpyrazine[j]	B		237–238	50.40	5.29[k]	50.25, 50.43	5.44, 5.22
Propiodide							
4-(*p*-Dimethylaminostyryl)quinoline	A		226		[l]		

[a] Carbon, hydrogen, and nitrogen analyses were carried out by Galbraith Microanalytical Laboratories, Knoxville, Tenn. Iodine was determined by the Volhard Method. [b] Recrystallized from 50% methanol. [c] Calcd.: I, 46.82; Found: (Carius Method) I, 46.95, 46.78. [d] Monohydrate. [e] Recrystallized from methanol and from isopropyl alcohol. [f] Calcd.: I, 26.20; Found; I, 26.01, 26.28. [g] Crude product was dissolved in hot 8*N* acetic acid and precipitated by neutralizing with ammonia. Recrystallized from methanol. [h] Calcd.: N, 6.51; Found: N, 6.54. [i] Calcd.: I, 32.44; Found: I, 32.50. [j] Recrystallized from methanol and from isopropyl alcohol. 2,5-Dimethylpyrazine was donated by Wyandotte Chemicals Corp., Wyandotte, Mich. [k] Calcd.: N, 11.02; Found: N, 10.59. [l] Calcd.: I, 28.56; Found: I, 28.7, 28.9.

(1) Aided by grants from the Research Corporation, the Medical Research Foundation, and the American Cancer Society.

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(6) Assisted by a grant from the National Cancer Institute.