All the quaternary salts II synthesized have similar UV absorption spectra [λ_{max}, nm (log ε): 245 (3.80), 275 (4.05)].

1,3-Dimethyl-3H-imidazo[4,5-b]pyridinium iodide (II, R = CH_3, X = I). Yield 84%, mp 219° C (isopropanol). Found, %: C 35.12; H 3.82; I 46.00. Calculated for $C_8H_{10}IN_3$, %: C 34.93; H 3.66; I 46.13.

1-Benzyl-3-methyl-3H-imidazo[4,5-b]pyridinium chloride (II, R = $CH_2C_6H_5$, X = Cl). Yield 85%, mp 214–215° C (mixture of chloroform and carbon tetrachloride). Found, %: C 64.43; H 5.39; Cl 13.67. Calculated for $C_{14}H_{14}ClN_3$, %: C 64.35; H 5.43; Cl 13.65.

3-Methyl-1-(β-hydroxyethyl)-3H-imidazo[4,5-b]pyridinium chloride (II, R = CH_2CH_2OH, X = Cl). Yield 86%, mp 199–200° C (mixture of ethanol and ether). Found, %: C 50.42; H 5.51; Cl 16.37. Calculated for $C_9H_{12}ClN_3O$, %: C 50.59; H 5.66; Cl 16.59.

1,3-Dimethylimidazo[4,5-b]pyridin-2-one (III, R = CH_3). Yield 65% by the oxidation of II and 55% by the methylation of IV. Mp 73° C (hexane). Found, %: N 25.74. Calculated for $C_8H_9N_3O$, %: N 25.75.

1-Benzyl-3-methylimidazo[4,5-b]pyridin-2-one (III, R = $CH_2C_6H_5$). Yield 40% by the oxidation of II and 75% by the benzylation of IV. Mp 96° C (heptane). Found, %: C 70.47; H 5.57. Calculated for $C_{14}H_{13}N_3O$, %: C 70.28; H 5.47.

3-Methylimidazo[4,5-b]pyridin-2-one (IV). Yield 75%. Mp 235° C (ethanol). Found, %: N 27.99. Calculated for $C_7H_7N_3O$, %: 28.17.

REFERENCE

1. Y. Mizuno, M. Ikehura, T. Itoh, and K. Saito, J. Org. Chem., 28, 1837, 1963.

8 January 1968

Donetsk Branch of IREA [All-Union Scientific
Research Institute for Chemical Reagents and
Particularly Pure Chemical Substances]

CONVERSION OF 1-ARYL-5-BROMODIHYDROURACILS INTO 1-ARYLURACILS

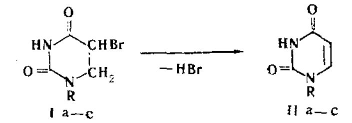
R. S. Baltrushis and I. I. Marioshyus

Khimiya Geterotsiklicheskikh Soedinenii, Vol. 4, No. 5, pp. 954-955, 1968

UDC 547.853

It is known [1–3] that when 5-bromo-1-methyldihydrouracil is heated at 155–160° C or when 1-aryl-5-bromodihydrouracils are heated with lithium chloride in dimethylformamide, hydrogen bromide is split out and 1-alkyl- or 1-aryluracils are formed.

We have found that the action on 1-aryl-5-bromodihydrouracils (**Ia–c**) of potassium cyanide, ammonia, or p-aminobenzoic acid, like that of lithium chloride in dimethylformamide, forms 1-aryluracils (**IIa–c**).



a R = p-$CH_3C_6H_4$; b R = p-$CH_3OC_6H_4$; c R = p-$C_2H_5OC_6H_4$.

Preparation of 1-aryluracils. a) A mixture of 0.016 mole of Ia–c, 0.02 mole of potassium cyanide, and 15 ml of quinoline was boiled for 45 min, and the **IIa–c** were extracted from the reaction mixture with benzene or chloroform. b) A mixture of 0.009 mole of **Ia–c** and 40 ml of a 9% solution of ammonia in methanol was heated in a tube at 150–155° C for 8 hr. On the addition of water IIa–c separated out. c) A mixture of 0.0075 mole of **Ia–c**, 0.008 mole of p-amino-benzoic acid, and 15 ml of ethanol was heated in a tube at 175–180° C for 5 hr 30 min. On the addition of water, **IIa–c** separated out. d) The reaction was carried out as described previously [3] with 0.0085 mole of **Ia–c**, 0.02 mole of lithium chloride, and 25 ml of dimethylformamide.

1-Aryluracils

Compound	Mp, °C (solvent)	Empirical formula	N, %		Yield, %			
			found	calculated	a	b	c	d
IIa	226.5—228 (dioxane)	$C_{11}H_{10}N_2O_2$	13.81	13.85	17	26	24	86
IIb	230.5—231.5 (dioxane)	$C_{11}H_{10}N_2O_3$	12.88	12.85	32	24	28	92
IIc	229—231 (ethanol)	$C_{12}H_{12}N_2O_3$	12.20	12.18	24	37	23	80

REFERENCES

1. D. J. Brown, E. Hoerger, and E. F. Mason, J. Chem. Soc., 211, 1955.

2. N. W. Gabel and S. B. Binkley, J. Org. Chem., 23, 643, 1958.

3. R. Baltrushis and I. Marioshyus, KhGS [Chemistry of Heterocyclic Compounds], 4, 1968 (in press).

4 April 1968

Kaunas Polytechnic Institute