Table 2.

Solvent system	Partition coefficients (K)						
	Pure compounds designed below			Components in adrenal vein blood			
	DC	P	Δ^4-A	x	x-Ac	y	z
n-Hexane / 50 % ethanol + 50 % H_2O	0.09	0.9		10			
n-Hexane / 75 % ethanol + 25 % H_2O			0.08	0.67	6.7		
n-Hexane / 90 % ethanol + 10 % H_2O				0.41		2.70	8.1

DC: Δ^4-Pregnene-21-ol-3,20-dione (Cortexone)
P: Δ^4-Pregnene-3,20-dione (Progesterone)
Δ^4-A: Δ^4-Androstene-3,17-dione
x-Ac: The acetate of the unknown component "x"

not due to the sulfuric acid alone which in itself gave rise to a double peak at 320 and 345 mμ.

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Semimicro Synthesis of Dihydrouracil and Uracil Labeled in Position 4, 5 or 6 with Carbon^{14}C

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Recent evidence indicates the dihydropyrimidines as intermediates in the catabolism of the pyrimidine bases. Lieberman *et al.*[1,2] have reported the isolation of an enzyme system from an anaerobic soil bacterium which reduced orotic acid to dihydroorotic acid. Di Carlo *et al.*[3] suggested dihydrouracil as an intermediate in uracil catabolism from studies on the assimilation of nitrogen by *Torula utilis*. The breakdown of dihydrouracil to β-alanine in rat liver slices is shown by Fink *et al.*[4], and Funk *et al.*[5] reported the isolation of dihydrouracil from beef spleen.

For further investigation of the metabolism of uracil and dihydrouracil and their biological relation, a semimicro synthesis of the two pyrimidines labeled in position 4, 5 or 6 has been worked out, using potassium cyanide-^{14}C or chloroacetic acid labeled with ^{14}C in the 2 or 1-position, respectively, as starting materials.

126 mg of potassium cyanide containing 2 mC of ^{14}C were treated with 244 mg of the potassium salt of chloroacetic acid, and the resultant potassium cyanoacetate was catalytically hydrogenated under a pressure of 2 atm. at 18° for 11 hours to β-alanine [6,7]. After two crystallizations from alcohol-water the crude β-alanine was reacted with 160 mg of potassium cyanate at 25°, forming the potassium salt of β-ureidopropionic acid [8,9]. Treatment of the crude product with hydrochloric acid and subsequent heating of the dry substance to 170° yielded 119 mg (56 % based on chloroacetic acid) of dihydrouracil-4-^{14}C crystallized from water. On recrystallization from water, adding charcoal, the product melted at 274—275° (reported [10] m. p. 275—276°). The theoretical specific activity was 9.1 μC per mg.

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40 mg of the dihydrouracil were brominated according to the method of Gabriel [11]. Subsequent heating of the crude product to 200° yielded 34.6 mg (88 % based on dihydrouracil) of uracil-4-^{14}C crystallized from water. On recrystallization from water, adding charcoal, the product melted at 335° as reported [10] for uracil. The theoretical specific activity was 9.1 μC per mg.

Attempts to prepare uracil by oxidation of dihydrouracil by alloxan according to Johnson [12] were unsuccessful.

Preparation of β-ureidopropionic acid labeled in the 1, 2 or 3-position is accomplished readily in aqueous solution according to Batt *et al.*[3] by decomposition in alkali of dihydrouracil labeled in position 6, 5 or 4 respectively.

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