A yield of 1.95 g. of uracil (62% based on urea) was obtained with a specific activity of 0.33 μc./mg.

The substance exhibited an ultraviolet absorption spectrum and an extinction coefficient identical with those reported in the literature.[11,12] A descending chromatogram of the material in a mixture of *t*-butanol–glacial acetic acid–water (65:25:10 v./v.), using Whatman No. 1 paper, showed a single radioactive component having an R_f value of 0.60. The product was subjected to an 8-plate countercurrent distribution in a system of 1 *M* potassium phosphate buffer at *p*H 6.8 and a mixture of equal volumes of *n*-butanol and *t*-butanol. The optical density at 260 mμ for the aqueous and organic layer of each plate was measured, and the sum of the values for the two phases of the various plates is plotted in Fig. 1. The relative radioactivity of each plate was determined by the addition of a constant volume of methanol and water to each plate to make the two layers mutually soluble. Aliquots of these solutions were then plated in plastic cups, dried and assayed for radioactivity in a gas-flow proportional counter. It was found that in addition to the background a correction for naturally occurring K^{40} of the buffer was necessary. The resulting values are plotted in Fig. 1. The close agreement, within the accuracy of the technique, with the calculated curve for authentic uracil having a distribution of 1.85 in such a system, indicated that the substance was of high purity.

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Absence of Rapid Exchange of Sulfur Atoms between Sulfate and Persulfate Ions

BY P. C. RIESEBOS AND A. H. W. ATEN, JR.

In aqueous solutions a rapid exchange between Hg^{++} and Hg^{2++}-ions has been reported.[1] This observation suggests that an investigation of exchange reactions between ion pairs of the same type might be a matter of some interest. As the sulfate–persulfate combination is fairly easy to handle, we have performed some experiments with this system. It may be pointed out that in this exchange process an oxygen–oxygen bond is affected, whereas in the sulfur exchanges studied earlier, like the $SO_4^{=}$–HS^-, SO_4–$SO_3^{=}$, $S_2O_3^{=}$–HS^- and $S_2O_3^{=}$–$SO_3^{=}$ reactions,[2] bonds between a sulfur and an oxygen atom or between two sulfur atoms were attached.

Solutions containing radioactive potassium sulfate, labeled with S^{35} (about 0.001 or 0.002 molar) and inactive potassium persulfate (about 0.0005 or 0.001 molar) were kept at room temperature for a week. The sulfate fraction was precipitated as barium sulfate after which the persulfate was decomposed by boiling with hydrochloric acid. Experiments were performed at *p*H values of about 1, about 7 and about 10. In all cases the average value of the specific activity of the sulfur in the persulfate amounted to less than 2% of the specific activity of the sulfate sulfur. (Large differences between figures obtained in duplicate experiments suggest, however, that most or all of the small activity found in the persulfate fraction may well be due to incomplete separation of the two fractions.) Under these circumstances the half-time of exchange amounts to about half a year at least.

Another series of exchange experiments was performed at *p*H about 10 in which the solutions were boiled for 5 minutes. This resulted in the decomposition of about $^1/_3$ of the persulfate, after which the average of the radioactivity in this fraction still did not amount to more than 1.5% of the total activity in the system. (Here again the wide variation of the results suggests that this limit may be far too high.)

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Synthesis of Histamine-2-C^{14}-Imidazole[1]

BY RICHARD W. SCHAYER[2]

Certain bacteria possess an enzyme which converts L-histidine into histamine and carbon dioxide.[3] Rodwell[4] has isolated unspecified strains of *Lactobacilli* possessing a very high histidine decarboxylase activity. Using an acetone powder preparation of these bacteria,[5] radioactive L-histidine has been decarboxylated and the radioactive histamine isolated as the dipicrate.

Experimental

Thiol-L-histidine-2-C^{14}-imidazole.—Radioactive sodium cyanide (approximately 3 mc.) was prepared from C^{14}-barium carbonate without dilution of the isotope by the method of Belleau and Heard.[6] The sodium cyanide was converted to sodium thiocyanate by the method of Castiglioni[7] as adapted by Borsook, *et al.*[8] After dilution with carrier equal to 1.5 times the estimated weight of the isotopic material, the sodium thiocyanate was treated with α,δ-diamino-γ-ketovaleric acid[9] (γ-ketoörnithine) producing 155 mg. of crystalline thiol-L-histidine which failed to melt up to 300°, as reported by Ashley and Harington.[9] Additional radioactive thiolhistidine was crystallized from the mother liquor after addition of carrier.

L-Histidine-2-C^{14}-imidazole.—One hundred and fifty mg. of thiolhistidine was oxidized with ferric sulfate to histidine[8].

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