Stannic Chloride Adducts with Lactones

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The formation of hydrobromides and hydrochlorides of coumarin, a lactone, has been reported,[2] as well as stannic chloride adducts of esters,[3] and aliphatic,[3] aromatic[4] and cyclic ethers.[5] Recently qualitative tests have demonstrated that dilute solutions of lactones in pentane form precipitates when solutions of stannic chloride in pentane are added. Three authentic lactones have been subjected to this test and the precipitates have been analyzed quantitatively for the content of tin by the method described earlier.[5] In each case the analysis corresponds to the formation of an adduct between two molecules of the lactone and one of stannic chloride as shown in Table I.

TABLE I

ANALYSIS OF ADDUCTS FOR STANNIC CHLORIDE

Lactone	1 Mole of lactone per mole of $SnCl_4$	2 Moles of lactone per mole of $SnCl_4$	Found
Coumarin	64.06	47.14	47.75
			47.45
			47.45
			47.10
Lactone of 2-hydroxybiphenyl-2′-carboxylic acid (6-dibenzopyrone)	57.04	39.90	40.76
			40.67
Phthalide	66.01	49.27	48.44
			47.89

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(2) W. H. Perkin, *Ann.*, **157**, 116 (1871).

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(5) *Ibid.*, p. 3821.

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COMMUNICATIONS TO THE EDITOR

THE RADIATION-INDUCED OXIDATION OF FERROUS ION[1]

Sir:

In the presence of dissolved molecular oxygen, ferrous ion in 0.8 N H_2SO_4 is more rapidly oxidized by ionizing radiations than in the absence of oxygen. The ratio of these rates provides important information regarding the role of molecular oxygen, and the variation of the ratio with the linear ion density characteristic of the radiations is a measure of the molecular yield.

Hart[2] has reported a value of 2.86 for the ratio of the rate of radiation-induced oxidation of ferrous ion in the presence and absence of oxygen, and has compiled reported values ranging from 2.5 to 4.0 for γ-rays and hard X-rays. Rigg, Stein and Weiss[3] have reported a minimum value of 2.0. Recently we have determined the value of this ratio for Co^{60} γ-rays to be 1.88 ± 0.04, as shown in Table I. This value is in excellent agreement with a value of 1.9 calculated on the basis of the mechanism proposed by Weiss[3] when it is modified to include the molecular hydrogen yield reported by Allen.[4]

Experimental procedures and a discussion of the sources of discrepancy amongst the various experimental values will be published.

TABLE I

	Observed: 3×10^{18} e.v./ml./hr. Ratio[a]	Observed: 1.2×10^{19} e.v./ml./hr.	Calcd.
$(dFe^{+++}/dt)_{O_2}/(dFe^{+++}/dt)_{H_2O}$	1.88 ± 0.04		1.90
$(dFe^{+++}/dt)_{O_2}/(dO_2/dt)_{Fe}$	4.15 ± 0.1	4.14 ± 0.2	4.25

[a] Fe^{+++} determined spectrophotometrically at 305 mμ; O_2 determined polarographically.

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(2) E. J. Hart, THIS JOURNAL, **73**, 1892 (1951).

(3) T. Rigg, G. Stein and J. Weiss, *Proc. Roy. Soc. (London)*, **211A**, 375 (1952).

(4) H. A. Schwarz, J. T. Lossee and A. O. Allen, THIS JOURNAL, **76**, in press (1954).

PURIFICATION AND STRUCTURE OF β-CORTICOTROPIN

Sir:

On behalf of my many colleagues in the Research Division[1] I wish to report that one of the physiologically active components of corticotropin from hog anterior pituitary has been separated in pure form and a tentative structure has been deduced. Seven other distinct proteins of equally high corticotropin activity were also isolated in lesser yields.

"Clinical" ACTH[2] prepared by the acetic acid

(1) Stamford Laboratories: R. G. Shepherd, K. S. Howard, A. R. Cacciola, S. B. Davis, D. S. Davies, E. A. Eigner, J. P. English, B. M. Finn, J. H. Meisenhelder, N. E. Shakespeare, S. D. Willson. Lederle Laboratories: A. W. Moyer, R. A. Brown, R. G. Child, M. C. Davies, C. C. Scrobola, J. van der Scheer.

(2) Supplied by Dr. David Klein, Wilson and Co., Inc., and by Dr. H. R. Cox, Lederle Laboratories, Research Division, American Cyanamid Company.