Anal. Calcd. for $C_{11}H_{21}NO_4$: N, 6.06. Found: (kjeldahl) N, 6.08.

This diester hydrolyzes in water in two successive steps to the monoester and to N-methyldiethanolamine, respectively, $k_1 = 0.0079$ min.$^{-1}$ and $k_2 = 0.0037$ min.$^{-1}$ at *p*H 7.4, 37°.

DEPARTMENT OF PHYSIOLOGICAL CHEMISTRY
JOHNS HOPKINS SCHOOL OF MEDICINE BARNETT COHEN
BALTIMORE 5, MD. ERVIN R. VAN ARTSDALEN

RECEIVED SEPTEMBER 21, 1951

S-(2-Methyl-1,4-naphthoquinonyl-3)-β-mercaptopropionic Acid

To a solution of 35.2 g. (0.2 mole) of 2-methyl-1,4-naphthoquinone in 800 ml. of 95% ethanol was added 21 g. (0.2 mole) of β-mercaptopropionic acid. The mixture was allowed to stand at 20° for two days at which time all of the starting material went into solution. The red brown solid remaining after removal of the solvent *in vacuo* was dissolved in 500 ml. of hot 50% alcohol. On cooling for one week an orange precipitate formed which was collected, washed with cold ether, and recrystallized from benzene to give 10 g. of bright orange needles, m.p. 161° (cor.).

The filtrate was concentrated, diluted with ether, and extracted with 10% sodium carbonate until color was no longer extracted. The alkaline extracts were extracted with 100 ml. of ether, which removed 2 g. of the starting quinone. The cooled alkaline solution was neutralized with 20% acetic acid and extracted with ether until the extract was colorless (*ca.* 500 ml.). The dark residue from this extract solidified on standing, and was dissolved in hot benzene, treated with charcoal, and twice crystallized to yield 7 g., m.p. 161° (cor.). A mixed melting point with the needles from the original reaction mixture showed no depression. The total yield of S-(2-methyl-1,4-naphthoquinonyl-3)-β-mercaptopropionic acid was 17 g. (30%). *Anal.* Calcd. for $C_{14}H_{12}O_4S$; C, 60.85; H, 4.37. Found: C, 61.23; H, 4.38. The compound is soluble in chloroform and ether but less soluble in ethanol (5 g./liter in 95% ethanol), ligroin and benzene and insoluble in water. It has no odor when pure.

DEPARTMENT OF PHARMACOLOGY
STATE UNIVERSITY OF IOWA
IOWA CITY, IOWA CALVIN HANNA

RECEIVED DECEMBER 26, 1951

Di-(diazoacetyl) and 3,5-Dinitro-ω-diazoacetophenone

Di-(diazoacetyl).—A solution of 3 g. of oxalyl chloride in 30 ml. of absolute ether was added dropwise with ice-cooling and stirring to a solution of diazomethane (from 21.5 g. of N-nitrosomethylurea) in 250 ml. of absolute ether. After the vigorous reaction had subsided the ether was removed *in vacuo*. A red, highly lachrymatory oil with suspended yellow crystals remained. After filtration and washing with a little ether the crystals were crystallized from benzene; yield 1.2 g. (37%), m.p. 122–123° (dec.).

Anal. Calcd. for $C_4H_2N_4O_2$: C, 34.8; H, 1.5; N, 40.6. Found: C, 35.1; H, 1.8; N, 40.7.

The substance is soluble in methanol and ethanol, insoluble in water.

The nature of the remaining red oil is being investigated.

3,5-Dinitro-ω-diazoacetophenone.—A solution of 5 g. of 3,5-dinitrobenzoyl chloride in 140 ml. absolute ether was added slowly with stirring and cooling to a solution of diazomethane (from 10 g. N-nitrosomethylurea) in 100 ml. of absolute ether. After three hours standing at room temp. the reaction mixture was cooled to −10°. The yellowish crystals obtained were recrystallized from methanol; yield 2.0 g. (39%), m.p. 106° (dec.).

Anal. Calcd. for $C_8H_4N_4O_5$: C, 40.7; H, 1.7. Found: C, 41.2; H, 1.7.

DEPARTMENT OF ORGANIC CHEMISTRY
THE HEBREW UNIVERSITY MAX FRANKEL
JERUSALEM, ISRAEL M. HARNIK

RECEIVED NOVEMBER 8, 1951

COMMUNICATIONS TO THE EDITOR

PITUITARY HORMONES. III.[1] THE ISOLATION OF CORTICOTROPIN-B

Sir:

Fractionation of pepsin digests of corticotropin with oxycellulose and by countercurrent distribution has yielded a product which is approximately 300 times as active as Armour Standard La-1-A ACTH. This material, which has the highest adrenocorticotropic activity yet reported, behaves as a pure substance. It is designated corticotropin-B, since its properties are different from those of corticotropin.

Swine pituitary gland extracts of activities of about 2 to 5 u./mg.[2] were purified with oxycellulose (10% carboxyl)[3] to give corticotropin fractions active at approximately 60 to 100 u./mg. These were then digested with pepsin (3.7 mg./g.) at *p*H 2.5 for twenty-four hours at 37°. Material insoluble in 5% trichloroacetic acid solution was discarded, and after removal of excess trichloroacetic acid by ether extraction, corticotropin-B concentrates were isolated by lyophilization.

When corticotropin-B concentrates of potencies about 100 u./mg. or higher were subjected to countercurrent distributions of 200 transfers, using the system *s*-butyl alcohol/0.5% aqueous trichloroacetic acid, corticotropin-B was obtained as a major component and reproducibly characterized by a distribution coefficient of about 0.6. The acetate salt of corticotropin-B was isolated from this fraction as an amorphous white solid by the use of Amberlite IRA-400 on the acetate cycle and lyophilization. A sample was redistributed through twenty transfers in the same solvent system and the fractions analyzed by their ultraviolet absorption

(1) The first two papers of this series are, I, N. G. Brink, M. A. P. Meisinger and K. Folkers, THIS JOURNAL, **72**, 1040 (1950); and II, N. G. Brink, F. A. Kuehl, Jr., M. A. P. Meisinger, M. N. Bishop and K. Folkers, *ibid.*, **74**, 480 (1952).

(2) Preparations were assayed by a modification of the adrenal ascorbic acid depletion method of M. A. Sayers, G. Sayers and L. A. Woodbury, *Endocrinol.*, **42**, 379 (1948). Results are expressed in U. S. P. units per milligram. Because of the variations in the assay, all values must be regarded as approximate. However, key samples of highest potency were assayed repeatedly at different dose levels to eliminate large errors in the estimation of activity.

(3) E. B. Astwood, M. S. Raben, R. W. Payne and A. B. Grady, THIS JOURNAL, **73**, 2969 (1951).