sults in tumor growth. This is usually associated with an increase in hemagglutination titer. 2. No evidence has been found for the multiplication of the virus in the sarcoma 180. The results are discussed as an analogy with the hemagglutination of red blood cells by the Influenza-Mumps-NDV group of viruses.

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Prompt Effect of Adrenal Stimulation on the Free Amino Acid Content of Rat Tissues. (19480)

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In studies involving the prolonged administration of the hormone preparation, it was found(1) that various endocrine factors influenced the free amino acid concentration of rat tissues. In connection with certain of our investigations it was important to know if these effects could be elicited upon short term treatment. We are reporting the effects within 2 hours of adrenocorticotropin and of various adrenal steroids on the free amino acid concentration of rat tissues.

Experimental. Male Sprague-Dawley rats, weighing approximately 160 g, were used in groups of 4 to 8 for each experiment. The hormone was administered subcutaneously after a preliminary fast of 16 hours and the animals were sacrificed 2 hours later. Picric acid filtrates of various tissues were immediately prepared and analyzed for amino acid content by the ninhydrin gasometric method (2). Analytical values are presented as mg of amino N/100 g of tissue, wet weight.

Results and discussion. The experimental results are presented in Table I. Deviations from normal are considered significant only if $P < 0.02$(3) and, in the table, are in italics. It can be seen that, of the tissues studied, only liver, kidney, and adrenal showed a short term response to hormone administration. This is in contrast to the report of Friedberg and Greenberg(1) where it was shown that, following several days treatment, kidney showed no response and there was a sharp rise for plasma. The inertness of cortisone acetate probably might be explained on the basis of poor absorption from the site of injection. That the liver, kidney, and adrenal changes represent specific target organ responses is supported by the lack of significant alteration in plasma levels.

An unexpected finding was the marked change in the free amino acid content of the adrenal following adrenocorticotropin ($P < 0.001$). In view of the ease and precision

TABLE I. Influence of Various Adrenal Hormones and of Adrenocorticotropin on Free Amino Acid of Tissue Concentration of Rat Tissues.

Treatment	Dose/ 100 g	Tissue					
		Heart	Liver	Kidney	Spleen	Adrenal	Plasma
Control	—	24.1±1.56	22.7±1.03	26.8±.85	35 ± .59	43.3± .86	4.21±.24
Adrenocortical extract (Upjohn)	.2 ml	25 ± .74	*28.7*± .87	*33.3*±.58	37.4±1.34	44.8±1.73	5.40±.40
Desoxycorticosterone glucoside	.5 mg	24.7± .59	*27* ± .47	27.4±.91	34.5± .45	43.8±1.47	5.10±.48
Cortisone acetate	.5 "	27.5± .76	26.4±1.02	28.9±.37	34.6± .66	46.3±1.98	4.19±.31
Adrenocorticotropin	.01 "	27.7± .69	*28.8*±2.00	*30.2*±.46	36.5±1.10	*53.6*±1.38	4.91±.31

Values are presented as means ± stand. errors.

of these determinations it is conceivable that this approach might be used in devising an assay method for adrenocorticotropin.

Summary. The effect within 2 hours of adrenocorticotropin and adrenal hormone administration on the free amino acid content of rat tissues was determined. Liver and kidney showed a significant increase following administration of either hormone preparation and the adrenals showed an increase following adrenocorticotropin administration.

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Genetic Modification of Response to Spleen Shielding in Irradiated Mice.* (19481)

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Jacobson and his coworkers(1,2) have demonstrated that shielding of the exteriorized spleen will protect CF-1 mice against lethal doses of whole body x-radiation. Hematopoietic activity in the shielded spleen is greatly stimulated within the first 24 hours after irradiation and recovery of hematopoietic elements in the bone marrow occurs sooner than in sham-shielded irradiated controls. However, spleen shielding has reportedly been only partially protective in other species. Evidence is presented herein of a significant difference in response of two different inbred strains of mice, associated with apparent differences in histologic appearance of the shielded spleens after irradiation.

Procedures. Mice of strains A (Strong) and C57 black, of both sexes, were divided equally with respect to age (range 32-69 days) among 3 groups. One was kept intact and received a single whole-body dose of 550 r. Physical factors were 120 Kvp, 9 ma, 0.25 mm Cu + 1.0 mm Al added filter, 30 cm mouse-target distance, 32 r/min. The spleens of the other two groups were exteriorized under nembutal anesthesia and placed respectively in lead or paraffin shields during irradiation to the same dose, as described by Jacobson *et al.*(1). Some animals in these groups died during operation. Animals were maintained under identical laboratory conditions and had free access to Purina Laboratory Chow and water. One animal of each strain was sacrificed in each group at 3, 5, 7, 9, and 11 days after irradiation; complete autopsies were performed and the thymus, spleen, superficial lymph nodes, and liver were fixed in Bouin's fluid for histologic examination. In addition, sternal bone marrow smears were made and stained with Wright's and Giemsa's stains. The remaining animals were observed daily for deaths during the first 30 days after irradiation.

Results are summarized in Table I and Fig. 1. The earliest deaths among sham-shielded A mice occurred on the 4th day, whereas deaths among the intact irradiated controls were not observed until the 12th day. From this point on, however, cumulative curves of these 2 groups were parallel and final mortality was almost identical. A similar premature onset of death, without a greater final incidence, occurred in sham-shielded C57 black mice. Death started significantly earlier among all groups of this strain than among strain A animals. The 2 strains also differed in the greater effect of

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