oxygen consumption of embryonated eggs. No evidence was obtained indicating that this virus induces a stimulation in the rate of oxygen uptake of such eggs during the course of the infection. Rather, it appeared that the rates of oxygen consumption followed intimately the normal value for embryonated eggs, as well as for eggs injected with an identical suspension of normal chick embryo tissue. Moreover, as the terminal stage of infection was reached, at approximately 17 hr, a marked drop in the $Q^{e}_{O_2}$ occurred. These findings are in accord with our previous observations utilizing the Newcastle's disease virus. It would appear that the growth of the virus in the embryonated egg either does not alter the metabolism until near the terminal stage, or, if the embryo metabolism is altered prior to this period, that a compensating mechanism functions in such a manner that no over-all variation in the $Q^{e}_{O_2}$ becomes apparent.

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The Biosynthesis of 17-Hydroxycorticosterone from 11-Desoxy-17-hydroxycorticosterone

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Following the demonstration by Hechter and his associates (*2*) that desoxycorticosterone was converted into corticosterone when perfused through an isolated beef adrenal gland, Hayano *et al.* (*1*) attempted to repeat the same conversion by incubating desoxycorticosterone or its glucoside with fresh adrenal slices or homogenates. They were able to demonstrate that a substance was formed which exhibited glycogenic activity in the mouse test. Although no isolation of the active component was attempted, it was assumed that oxygen had been added to desoxycorticosterone at the carbon-11 position with the formation of either corticosterone or 11-dehydrocorticosterone.

Employing a technique similar to that described by Hayano *et al.* (*1*), the authors have been able to demonstrate that 11-desoxy-17-hydroxycorticosterone (Reichstein's Compound S) can be converted into 17-hydroxycorticosterone (Kendall's Compound F).

The procedure used in these experiments was as follows: Ten g of beef adrenal gland were finely homogenated with 30 ml of a solution of .01 *M* glucose, 0.062 *M* sodium chloride, 0.02 *M* disodium phosphate, 0.025 *M* potassium chloride, 0.004 *M* magnesium sulfate, and 0.01 *M* sodium fumarate. The homogenate was incubated with 2–10 mg 11-desoxy-17-hydroxycorticosterone (Compound S), added as a fine 0.1% aqueous suspension, for 3 hr at 37° C in an atmosphere of oxygen. Following incubation, proteins were precipitated by the addition of 5 volumes of acetone. The glandular residue was removed and extracted with acetone. Both acetone solutions were combined and the solvent removed by distillation under reduced pressure. Saline was added before the final portion of the acetone was removed. The saline layer was then extracted with chloroform and the chloroform layer concentrated to approximately 1–2 ml. The sample was chromatographed on large sheets of filter paper, using the toluene-propylene glycol system described by Zaffaroni *et al.* (*4*). The sheets were developed for 48–72 hr, sufficiently long to permit good separation of 11-dehydro-17-hydroxycorticosterone and 17-hydroxycorticosterone, both of which are present as bands from chromatograms of extracts of incubated homogenates containing no added Compound S. The locations of the various compounds on the paper were detected by means of ammoniacal silver nitrate reagent and were compared with standard reference strips with Compounds E, F, and S developed at the same time.

The regions containing Compound F were then removed, and the sterol was extracted with chloroform. Upon slow evaporation of the chloroform solution, crystalline material appeared. This was collected and twice recrystallized from chloroform. The final product consisted of fine crystalline needles, which melted at 203°–204° C, with a specific rotation of 157°. The crystals gave the characteristic green fluorescence of Compound F when treated with concentrated sulfuric acid. The physical properties of the crystalline material were compared with a highly purified sample of natural Compound F[1] and found to be almost identical.

The procedure described above resulted in approximately 50% of the added Compound S being converted into Compound F, as determined by the biological activity of the material present in the final chloroform solution. During this process the remaining portion of the Compound S, not accounted for in the formation of Compound F, was converted into other substances that have not as yet been characterized.

Incubation of Compound S with heat-inactivated homogenates or in an atmosphere of nitrogen resulted in no significant conversion of this compound into other substances.

A detailed report of the specific conditions necessary for maximum conversion of Compound S to Compound F and the nature of other products that are formed is now being prepared and will be published elsewhere.

Since this work was completed, Hechter *et al.* (*3*) have shown that Compound S is converted into Compound F by perfusion of the steroid through surviving adrenal glands.

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[1] Kindly supplied by J. J. Pfiffner.