the water extract was acidified with 1 *N* HCl and then shaken with *n*-butanol. The butanol extracts, evaporated *in vacuo* to a few milliliters, gave a crude yellowish brown concentrate which was then taken up with 1 *N* HCl and centrifuged. Either evaporation *in vacuo*, or neutralization of the supernatant yielded a light brown-yellowish product. This was then taken up with water, centrifuged, and concentrated to yield a crystalline precipitate which was further purified by chromatographic methods. The yield of E.II.C. was about 0.3% of the initial fresh weight of the tissue, and that of E.IV was approximately 0.15%.

*Properties.* Analysis for inorganic constituents was negative. E.II.C. gave positive ninhydrin, Fehling, and Friedel-Craft tests. E.IV gave positive Fehling and ferric chloride tests. Both substances are soluble in distilled water, acids, and strong bases, and insoluble in dilute bases. E.II.C. precipitates at pH 6.7, and an E.IV at pH 7.2. Further properties are summarized in Table I.

Microbiological tests at standard concentrations of 5 μg./ml. were carried out by the agar cup method. The results are listed in Table II.

Preliminary *in vivo* tests for phototoxity and virus control were made on potato, tomato, tobacco, and bean plants, as well as on citrus fruits, supplying the material either by spraying the leaves or by injection into the soil surrounding the plant. No visible damage to the fruits and plants could be detected at the concentration range employed (5–50 μg./ml.). Further studies are in progress.

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## The Conversion of Deoxycorticosterone to 19-Hydroxy-11-deoxycorticosterone by Adrenal Homogenate Residues[1]

We should like to report the identification of a compound isolated some 3 years ago from the incubation of deoxycorticosterone (DOC) with the twice-washed homogenate residue (5000 × *g*) of beef adrenals (1). The infrared spectrum of this substance has now been found to be identical with that of a compound isolated by Levy and Kushinsky (2) from perfusates of progesterone through isolated bovine adrenals and identified by them as 19-hydroxy-11-deoxycorticosterone, a substance recently synthesized by Barber and Ehrenstein (3).

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The occurrence of 19-hydroxylation in mammalian tissue was recognized for the first time in incubation experiments with androstenedione. The formation (4) and subsequent identification (5) by Meyer of 19-hydroxy-$\Delta^4$-androstene-3,17-dione, a hitherto unknown steroid, has been announced.

One gram of DOC was incubated as previously described [see "Corticosterone" p. 178 (1)]. The silica gel chromatography fractions containing material more polar than corticosterone were combined and subjected to a second chromatography. The ethyl acetate eluates were processed by paper chromatography in the toluene–propylene glycol system of Zaffaroni *et al.* (6). Material migrating at a rate approximately one-third that of corticosterone was separated and crystallized twice to give 5 mg., m.p. 155–159°C. (corrected). The functional groups absorbed near 3333 cm.$^{-1}$ (—OH); 1703 cm.$^{-1}$ ($C_{20}$=O); 1642 and 1610 cm.$^{-1}$ (—C=C—C=O); whereas some fingerprint bands appeared near 1127, 1091, 1066, 1046, 1037, and 1011 cm.$^{-1}$ (solid film).

Identification of this compound as 19-hydroxy-11-deoxycorticosterone was established as stated above.

Further investigation of the enzymology of 19-hydroxylation is under way.

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## The Isolation of 19-Hydroxy-11-deoxycorticosterone and an Unknown, Active Mineralocorticoid from Bovine Adrenal Perfusions of Progesterone[1]

We have previously described the isolation of 17 $\alpha$-hydroxyprogesterone, 11 $\beta$-hydroxyprogesterone, corticosterone and 17 $\alpha$-hydroxycorticosterone from perfusions of progesterone through isolated bovine adrenal glands. We wish to report

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