matic proton in the reduction product (II) appears at 6.30 δ aflatoxin B has structure I.

The substance with yellow-green fluorescence, $C_{17}H_{12}O_7$, mol. wt. 328 (mass. spec.), m.p. 244–246° dec., $[\alpha]_D^{CHCl_3}$ −556°; λ_{max}^{EtOH} 243, 257, 264, 362 mμ (ϵ 11,500; 9,900; 10,000; 16,100); $\nu_{max}^{CHCl_3}$ 1760, 1695, 1630, 1595 cm.$^{-1}$ is identical with aflatoxin G.[3] Its n.m.r. spectrum exhibits an A_2X_2 pattern at 4.47 (triplet, J = 6 c.p.s., 2H) and 3.48 δ (triplet, J = 6 c.p.s., 2H). The chemical shifts and multiplicities for all other protons are identical with those of aflatoxin B(I) and we conclude that aflatoxin G has structure IV.

Acute toxicities were determined by biological assay in day-old White Pekin ducklings. Groups of ten animals weighing 51 ± 4 g. received various dose levels of the appropriate compound dissolved in propylene glycol, each animal receiving 0.1 ml. by stomach tube. Mortality and body weights were recorded 48 hr. after administration. Under these conditions the LD_{50} for aflatoxin B (I) was calculated as 28.2 μg. with 95% confidence limits of 24.7 and 32.2 μg. The LD_{50} for aflatoxin G (IV) was estimated to be 90 μg. Administration of 50 μg. of the reduction product (II) resulted in no mortality compared to 100% mortality with the same dose of the parent compound (I).

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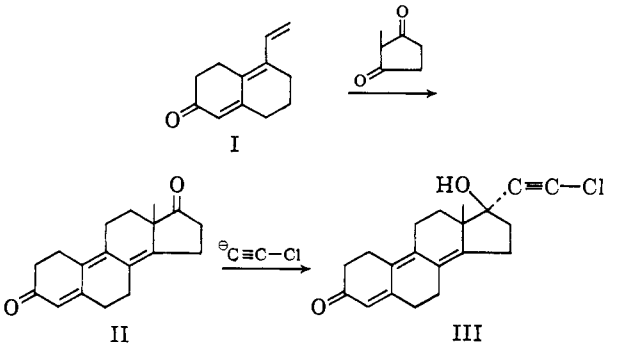
SYNTHESIS OF 19-NOR STEROIDS. II. *d,l*-17α-CHLOROETHYNYL-19-NOR-4,10(9),8(14)-ANDROSTATRIENE-17β-OL-3-ONE[1]

Sir:

It was shown previously[2] that introduction of a C-9, 10 double bond markedly enhances the gonadotrophin inhibiting activity of 17α-chloroethynyl-19-nor-4-androstene-17β-ol-3-one. It was, therefore, of interest to determine whether an additional double bond at C-8,14 would further potentiate activity.

We wish to report the preparation of *d,l*-17α-chloroethynyl-19-nor-4,10(9),8(14)-androstatriene-17β-ol-3-one (III) and its precursor, *d,l*-19-nor-4,10(9),8(14)-androstatriene-3,17-dione (II) by a relatively short synthesis.



Reaction of (I)[3] with 2-methylcyclopentane-1,3-dione[4] in the presence of diethylamine afforded II, m.p. 131–132°; ultraviolet λ_{max}^{MeOH} 350 mμ, ϵ 24,200 (*Anal.* Found: C, 80.90; H, 7.60). It is interesting to note that both Michael condensation and cyclodehydration occurred in the basic condensing medium in *ca.* 17% yield, in view of earlier reports[3,5,6] that in analogous systems acid is required to accomplish the dehydration reaction.

Selective chloroethynylation of II at C-17 was achieved using sodium chloroacetylide in liquid ammonia[7] to yield III, m.p. 159–160°; ultraviolet λ_{max}^{MeOH} 358 mμ, ϵ 19,900 (*Anal.* Found: C, 72.97; H, 6.45).

Preliminary test results[8] with racemic III showed oral gonadotrophin inhibition[9] (parabiotic rats) and oral progestational activity[10] of 1.5–2.0× 17α-ethynyl-19-nor-4-androstene-17β-ol-3-one.[11]

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