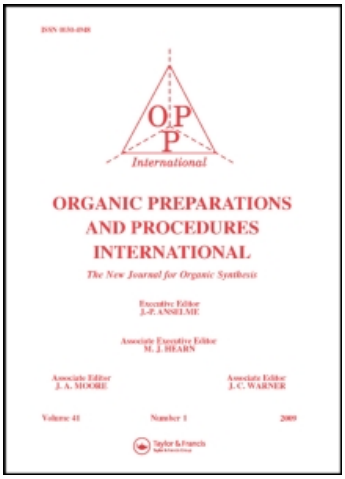

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SULTAMO-STEROIDS II

S. H. Doss[a]; S. S. A. Dimitry[ab]
[a] National Research Center, Cairo, Egypt ARE [b] Chemistry Department, Brock University, Ontario, Canada

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REFERENCES

1. P. Vanhoof, P. Clarebout, Ger. Pat. 2,060,721, (1971); Chem. Abstr., 75, 76463x (1971). (equiv. U.S. Pat. 3,923,813).

2. P. Vanhoof, P. Clarebout, Ger. Pat. 2,349,841 (1974); Chem. Abstr., 81, 3674f (1974). (equiv. U.S. Pats. 3,943,172; 3,981,872; and 3,984,464).

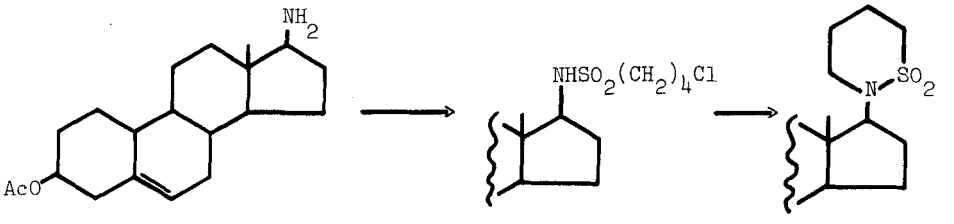
3. IIa and IIb are most commonly prepared by the reduction of I to the corresponding alcohols which are then converted to the mesylate. Reaction of the mesylates with an excess of aniline provides IIa and IIb.[1,2]

SULTAMO - STEROIDS II†

Submitted by S. H. Doss* and S. S. A. Dimitry††
(4/28/77)

National Research Center
El Tahrir Street
Dokki, Cairo
Egypt A.R.E.

Further syntheses in the sultamo steroids are reported.[1] Cyclization of II to III occurred without racemization.[2] III showed the characteris-

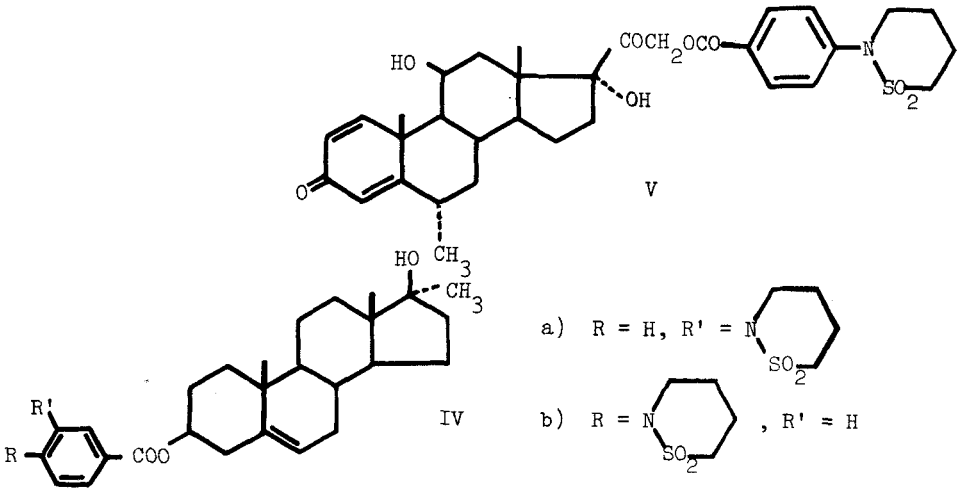


I II III

tic sultam band[3] at 1290 cm^{-1} and SO_2 absorptions at 1330 and 1130 cm^{-1} while II displayed absorptions at 1350 and 1150 cm^{-1} (SO_2). The nmr spectrum of III showed two singlets for the two angular methyl groups at

δ0.79 (CH_3 at C_{18}) and 1.07 (CH_3 at C_{19}). The doublet of the protons of the amino group of II at δ5.33 was absent in the spectrum of III.

The following sultamo steroids are also described. The schistoso-



micidal effect of these new compounds is under investigation.

EXPERIMENTAL

All melting points are uncorrected, IR spectra were obtained on the Perkin-Elmer Spectrophotometer Model 221 with Gitter-Prismen-Austaucheinheit; NMR spectra were determined in $CDCl_3$ on a Varian A-60 spectrometer, with TMS as an internal reference. M.S. were obtained with Atlas CH_4. Microanalysis was carried out by Dr. Pascher, Bonn and Microanalysis department Universität des Saarlandes - W/Germany.

Compound II.- To a solution of 1.63 g. (0.05 mole) of 17-β-amino-5-androsten-3β-ol acetate,[3] mp. 177-180°, $[\alpha]_D^{23}$ = -51.9 in chloroform (c = 0.55%) in 30 ml of dry benzene containing 1 ml pyridine was added dropwise 1.1 g (0.05 mole) 4-chloro-1-butanesulfonyl chloride. The reaction mixture was stirred overnight. The precipitated pyridine hydrochloride was filtered and the benzene layer was washed with 1% hydrochloric acid, water, then dried over anhydrous Na_2SO_4. After evaporation of the benzene, a viscous yellowish oil was obtained. Crystallization of the oil from benzene/petroleum ether gave II, mp. 48-54°, $[\alpha]_D^{23}$ = -115.7 in chloro-

form (c = 0.11%). Compound II is soluble in ethanol, ether, and chloroform and insoluble in water, petroleum ether, cyclohexane, and dimethyl formamide. Its IR revealed the characteristic SO_2 bands at 1170 and 1350 cm^{-1}.

Anal. Calcd. for $C_{25}H_{40}NO_4SCl$: S, 6.59; N, 2.88.

Found: S, 6.30; N, 2.72.

Compound III.- A solution of 2.42 g (0.05 mole) of II in 20 ml of 10% sodium hydroxide was warmed on a water bath for 2 hrs. After cooling, the solid formed was recrystallized from petroleum ether to give a pale brownish power, m.p. 86-88°, $[\alpha]_D^{23}$ = -32.7 in chloroform (c = 0.36%). III is soluble in benzene and chloroform, insoluble in petroleum ether. M.S.: m/e 449 $(M+)$[14].

Anal. Calcd. for $C_{25}H_{39}NO_4S.1/2\ H_2O$: C, 65.50; H, 8.73; N, 3.05; S, 6.98.

Found: C, 65.4; H, 8.78; N, 2.38; S, 6.67.

Compound IVa.- To a stirred solution of 3.04 g (0.01 mole) of 17α-methyl androsten(5)-3β-17β-diol in 200 ml of dry benzene and 1 ml of dry pyridine at room temperature, a solution of 2.73 g (0.01 mole) of m-(N-butansultamyl) benzoyl chloride in 20 ml of dry benzene was added dropwise. Stirring was continued for 2 days, worked up as usual;[1] the remaining solid after evaporation weighed 4.9 g. Fractional crystallization using carbon tetrachloride/petroleum ether (7/5) gave 1.9 g (35%) of IVa which gave one spot on t.l.c. (benzene: petroleum ether). It was crystallized from methylene chloride or ether/petroleum ether or chloroform/petroleum ether, m.p. 156-158°, $[\alpha]_D^{13}$ = -31.65 in chloroform (c = 0.5%). Compound IVa is soluble in dioxane, N,N-dimethylformamide, trifluoroethanol and insoluble in cyclohexane and isooctane.

Anal. Calcd. for $C_{31}H_{43}O_5NS.H_2O$: C, 66.53; H, 8.10; N, 2.50; S, 5.72.

Found: C, 66.57; H, 7.83; N, 2.39; S, 6.27.

Compound IVb.- The same amounts used in the preparation of IVa were utilized. Stirring was continued for 2 weeks. The solid formed was filtered then dissolved in chloroform and the precipitated pyridine hydrochloride (0.49 g) was filtered. The solution was then washed with dil. hydrochloric acid, water, dilute sodium bicarbonate, then water followed by drying over anhydrous Na_2SO_4. The remaining solid (1.8 g) gave two spots on t.l.c. After several fractional crystallizations from chloroform/acetone (1/4), the remaining solid after crystallization from 45 ml of dioxane weighed 0.9 g. The filtrate was worked up as usual[1] to give 0.6 g of pure product. The overall crystallized yield was 1.5 g (28%), mp. 222-225°, $[\alpha]_D^{13}$ = +1.35 in chloroform (c = 0.44%). Compound IVb is soluble in N,N-dimethylformamide and benzene, sparingly soluble in chloroform, ether and insoluble in cyclohexane, methanol, and isooctane.

Anal. Calcd. for $C_{31}H_{43}O_5NS$: C, 68.74; H, 8.00; N, 2.59; S, 5.90.
Found: C, 68.55; H, 7.42; N, 2.8; S, 6.22.

Compound V.- A mixture of 0.37 g (0.001 mole) of urbasone in 40 ml of tetrahydrofuran, 0.3 ml of pyridine and 0.27 g (0.001 mole) of p-(N-butansultamyl) benzoyl chloride in 10 ml benzene was stirred for two days. After the usual working up,[1] the remaining solid (0.5 g.) was crystallized from benzene/chloroform. The solid (0.17 g) showed a single spot on t.l.c. and was crystallized from 1 ml methanol and 6 ml water into fine colorless powder (0.16 g. 26%), mp. 209-211°, $[\alpha]_D^{22}$ = + 101.2 in chloroform (c = 0.8%). Compound V is soluble in methanol, dioxane, trifluoroacetic acid, chloroform, acetonitrile and acetone and is insoluble in isooctane, cyclohexane and water. M.S.: m/e = 611 (M^+).

Anal. Calcd. for $C_{33}H_{41}NO_8S$ (611.70): C, 64.80; H, 6.76; N, 2.29; S, 5.23.
Found: C, 64.97; H, 6.86; N, 2.22; S, 5.12.

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REFERENCES

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†† Present address: Chemistry Department, Brock University, Ontario, Canada.

1. S. H. Doss, Rev. Roumaine Chim., 20, 241 (1975); see also G. Rousseau, V. Torelli (Roussel - UCLAF) Ger. offen. 2,541,659 (Cl. C 07 J) 8 Apr. 1976; cf. C.A. 85, 46951 u.
2. G. Snatzke and S. H. Doss, Tetrahedron, 28, 2539 (1972).
3. S. H. Doss, Chem. Industry, 961 (1971), Acta Chem. Acad. Sci. Hung., 72, 341 (1972); Rev. Roumaine Chim., 17, 1611 (1972); Applied Spectroscopy, in press (1977).

ETHYL 2-(4-AMINOPHENYL)PROPIONATE

Submitted by M. Perchinunno, A. Guerrato*, F. Pregnolato
(8/8/77)

Department of Chemistry
Research Division
Laboratori Glaxo S.p.A. - Duncan Farmaceutici S.p.A.
Via Fleming,2 37100 Verona (Italy)

Ethyl 2-(4-aminophenyl)propionate(IV), a useful intermediate in the preparation of pharmaceutical drugs has been obtained as shown below.[1]