

The Structure of the So-called α - Δ^5 -Cholestenone Oxide

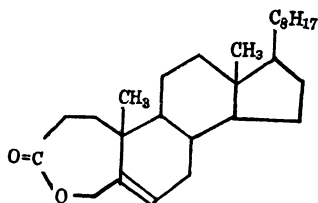
By Susumu MORI and Fumikazu MUKAWA

(Received July 23, 1954)

The structure of the so-called α - Δ^5 -cholestenone oxide has not yet been precisely proved.^{1, 2)} The study of it has shown that the compound is not an epoxide but a lactone. The reduction of the compound with lithium aluminium hydride in ether gave a diol (m.p. 129°C. Found: C, 80.09; H, 11.94, calcd. for $C_{27}H_{48}O_2$: C, 80.13; H, 11.96%), which was obtained pure in a good yield.

The diol showed a strong absorption peak in 3.0μ (Nujol mull), indicating the presence of a hydrogen-bonded hydroxyl group, but no longer a peak in the 5.8μ region characteristic of carbonyl function. Oxidation of the diol with chromium trioxide-pyridine complex gave the known 3, 4-seco- Δ^5 -cholestene-3, 4-dioic acid (Diels' acid). Then it was converted into the dimethyl ester, which showed no depression of the melting point on admixture with an authentic specimen.

From a consideration of the results it seems most reasonable to conclude that the so-called α - Δ^5 -cholestenone oxide is an unsaturated lactone as illustrated by formula (I).



(I)

*Department of Chemistry, Faculty of
Science, Tokyo Metropolitan
University, Setagaya, Tokyo*

1) L. Ruzicka and W. Bosshard, *Helv. Chim. Acta*, **20**, 244 (1937).

2) Y. Urushibara and M. Chuman, *This Bulletin*, **22**, 273 (1949).