

Full details of this synthesis will be published elsewhere. The work is being extended in various directions.

A. R. BATTERSBY and H. T. OPENSHAW

United College, University of St. Andrews, Scotland, September 5, 1950.

Zusammenfassung

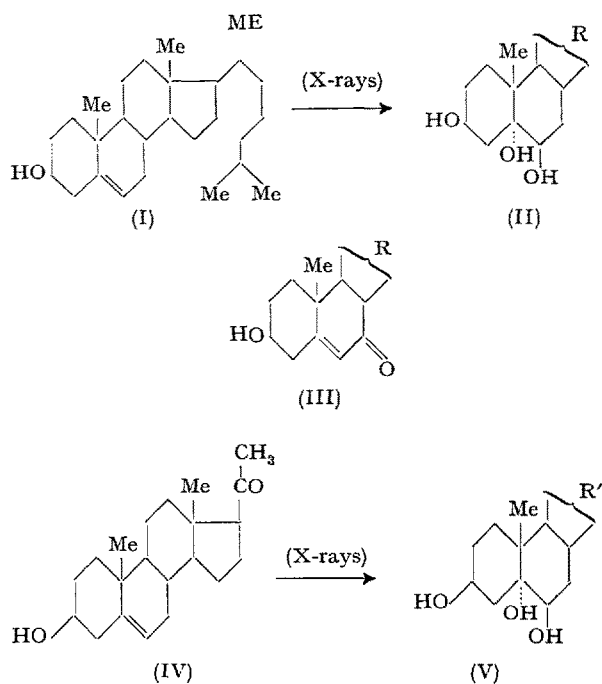
Die Verbindung (I) wurde über die Zwischenstufen (II)–(V) synthetisch aufgebaut. Die Oxydation von (I) mit Mercuriacetat lieferte *dl*-Rubremetiniumbromid, dessen Absorptionsspektrum mit demjenigen von *d*-Rubremetiniumbromid, dargestellt aus Emetin, identisch ist. Die heute als richtig angenommene Strukturformel von Emetin wird dadurch bestätigt.

Chemical Action of Ionizing Radiations on Steroid Compounds

Substances produced by the action of X-rays on cholesterol and on Δ^5 -pregnene-ol-one in aqueous systems

In continuation of previous work¹ on the chemical action of ionizing radiations and the formation of free radicals and atoms in these processes² we have investigated the action of X-rays on cholesterol (I) and Δ^6 -pregnene-ol-one (IV) in aqueous systems (aqueous solutions of water-soluble derivatives and aqueous acetic acid solutions).

From these irradiated solutions we were able to isolate and to characterize by unambiguous methods in the case of (I): cholestane-triol (3 β , 5 α , 6 β) (II) and Δ^5 -cholestene-ol (3 β)-one (7) (III) and in the case of (IV): allo-pregnane-triol (3 β , 5, 6 β)-one (20) (V).



¹ G. STEIN and J. WEISS, *Nature* 161, 650 (1948); 162, 184 (1948). – F. T. FARMER, G. STEIN, and J. WEISS, *J. Chem. Soc. (London)* 3241 (1949). – G. STEIN and J. WEISS, *J. Chem. Soc. (London)* 3256 (1949). – H. LOEBL, G. STEIN, and J. WEISS, *J. Chem. Soc. (London)* 888 (1950).

² J. WEISS, *Nature* 153, 748 (1944); *Trans. Faraday Soc.* 43, 314 (1947).

These substances are formed in good yields and we were always able to account for 80 and sometimes 90% of the starting materials.

It is worth noting that compound (II) has been isolated from the arterio-sclerotic human aorta¹, from pig's testes², and from beef liver³, and compound (III) from bull's testes⁴ and from pig's testes⁵.

The results obtained may be of some general interest on account of the importance of sterols and steroid hormones in cell metabolism and in view of the role of cholesterol as a precursor in the bio-synthesis of steroid hormones and the close relationship of Δ^5 -pregnene-ol-one to the sex hormones.

A full account including a discussion of the mechanism of these processes will be published elsewhere.

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JOSEPH WEISS and MAX KELLER

University of Durham, King's College, Newcastle on Tyne, England, May 12, 1950.

Zusammenfassung

Nach der Bestrahlung verdünnter Lösungen von Cholesterin beziehungsweise Δ^6 -Pregnen-ol-(3 β)-on-(20) mit Röntgenstrahlen, isolierten wir Cholestan-triol-(3 β , 5 α , 6 β) und Δ^5 -Cholesten-ol-(3 β)-on-(7) beziehungsweise allo-Pregnan-triol-(3 β , 5, 6 β)-on-(20).

¹ E. HARDEGGER, L. RUZICKA, and E. TAGMANN, *Helv. chim. acta* 26, 2205 (1943).

² L. RUZICKA and V. PRELOG, *ib.* 26, 975 (1943).

³ G. A. D. HASLEWOOD, *Biochem. J.* 35, 708 (1941).

⁴ F. STEINMANN, *Helv. chim. acta* 26, 2222 (1943).

⁵ V. PRELOG, E. TAGMANN, S. LIEBERMANN, and L. RUZICKA, *ib.* 30, 1080 (1947).

The Structure of NaPt₃O₄

Following JÖRGENSEN¹ and WÖHLER² we have prepared a platinum oxide by heating an intimate mixture of sodium chloroplatinate and sodium carbonate just to melting. JÖRGENSEN's analysis of the product led him to the formula Pt₃O₄ while WÖHLER's more detailed analysis gave varying results fitting a formula PtO_x with $1 \leq x \leq 2$. WÖHLER found that the product also contained small amounts of water and sodium which could not be removed even by boiling with acids. The work reported here shows that the compound formed is actually NaPt₃O₄.

X-ray powder diagrams of our jet black preparation showed a set of very sharp lines which could be indexed on a cubic simple lattice of cell edge 5.689 ± 0.002 Å. Accurate intensity values for filtered CuK α radiation were obtained for $\theta < 45^\circ$ with a Norelco Geigercontour instrument and for higher values of θ by careful visual analysis using the multiple film technique and applying an absorption correction.

Systematic extinctions led to the probable space groups $O_h^3 - Pm\bar{3}n$ and $T_d^2 - P\bar{4}3n$. It was further found that reflections (*hkl*) occurred only when either of the following conditions was satisfied:

$$h + k + l = 2n; \quad (1)$$

$$h = 4n, k = 4n + 2, l = 4n \pm 1. \quad (2)$$

¹ S. M. JÖRGENSEN, *J. pr. Chem.* 16, 344 (1877).

² L. WÖHLER, *Z. anorg. Chemie* 40, 450 (1904).