

mäßigkeit. Unterschiede zwischen den Kontrollstückchen ohne Hormone und den Geweben aus den Hormonlösungen waren nicht feststellbar. Es erscheint daher wahrscheinlich, daß die Hemmung der Schilddrüsenfunktion auf dem Umweg über die Hypophyse erfolgt. Das Verfahren gibt somit Aufschluß über die hemmende Wirkung, welche Sexualhormone oder andere Substanzen auf die Hypophyse ausüben.

J. H. MÜLLER und H. AEPPLI

Radiologische Abteilung und Hormonlaboratorium der Universitätsfrauenklinik, Zürich, den 11. März 1949.

Summary

The function of the pituitary gland was studied by measuring the uptake of radioiodine ( $I^{131}$ ) in the rat thyroid. High doses of previously injected sex hormones showed an inhibitory effect on the pituitary gland, demonstrated by a diminished uptake of radioiodine, which results from a lowered production of thyrotropic hormone. This procedure might be used as an indicator of the presumable clinical efficacy of hormones or other substances to be used in the menopausal syndrome.

PRO LABORATORIO

H<sub>2</sub>-Detection  
in the Warburg Constant Volume Respirometer

A method has been worked out by which H<sub>2</sub>, produced by bacterial and other tissues from different substrates, may be detected in the Warburg constant volume respirometer. The principle consists in absorbing the evolved hydrogen by colloidal palladium. The latter is prepared according to PAAL *et al.*<sup>1</sup>. 150 mg Na-protalbinat<sup>2</sup> and 250 mg PdCl<sub>2</sub> are dissolved in 5 ml water containing 113 mg NaOH, reduced with H<sub>2</sub> at 60° during 2 hours, and dialysed. Before use an O<sub>2</sub>-current is passed through the suspension, the latter precipitated with diluted H<sub>2</sub>SO<sub>4</sub>, and the precipitate dissolved again in slightly alkaline Na-picrate solution. We used a suspension containing 49 mg colloidal Pd and 220 mg picric acid, as Na-salt, in 12 ml. The activity of this suspension was controlled in the Warburg vessel by means of H<sub>2</sub> produced from Mg and H<sub>2</sub>SO<sub>4</sub> (Table I).

<sup>1</sup> C. PAAL and W. HARTMAN, Ber. Dtsch. chem. Ges. 43, 243 (1910). – C. PAAL and C. AMBERGER, Ber. Dtsch. chem. Ges. 38, 1401 (1905).  
<sup>2</sup> C. PAAL, Ber. Dtsch. chem. Ges. 35, 2195 (1902).

Table I

Time in hours	Total vol. mm <sup>3</sup> H <sub>2</sub> in the vessel	mm <sup>3</sup> H <sub>2</sub> uptake/hour
0	322	62
1	260	50
2	210	56
3	154	44
4	105	46
5	59	28

As may be deduced from this table, a quantitative absorption is reached only after several hours, and the rate of uptake is dependent on the partial H<sub>2</sub>-pressure.

For the detection of H<sub>2</sub> by this method, two Warburg manometers A and B are required. Both contain the substrate, buffer, and bacterial suspension. In the centre wall of A 0.3–0.4 ml colloidal Pd are introduced. If there is any H<sub>2</sub>-production, its absorption will be noticed in A. This method may be used aerobically as well as anaerobically. Table II illustrates an experiment with H<sub>2</sub> produced by *E. coli* (strain K<sub>3</sub>) from H-COOH in N<sub>2</sub> atm.

Table II

Warburg manometer	B	A
ml phosphate buffer M/15, p <sub>H</sub> 7 .	0.5	0.5
ml glucose solution 4% . . . . .	0.5	0.5
ml bacterial suspension . . . . .	1	1
center well: ml colloidal Pd . . . . .	–	0.3
side-arm: ml KOH solution 10% .	0.1	0.1
H <sub>2</sub> mm <sup>3</sup> /hour, measured. . . . .	710	654
Analogous experiment:		
H <sub>2</sub> mm <sup>3</sup> /hour, measured. . . . .	139	74

Since aerobically O<sub>2</sub> is reduced, and both anaerobically and aerobically, the rate of absorption of H<sub>2</sub> by the colloidal suspension is usually smaller than its production rate by the tissues, there was no quantitative determination obtained in either case.

We are indebted to Prof. Dr. J. GILLIS, Laboratory of Analytical Chemistry, University of Gent, for the kind permission to use the PdCl<sub>2</sub> of his laboratory.

J. DE LEY

Biochemical Laboratory, Veterinary College, University of Gent, Belgium, February 14, 1949.

Zusammenfassung

Wasserstoff, der von Bakterien oder Geweben entwickelt wird, kann mit Hilfe der Warburg-Apparatur bestimmt werden. Hierbei wird kolloidales Palladium als Adsorbens verwendet.