Wir erhielten so die folgenden Werte:

Atmosphäre	Verbrauchter O_2 in mm^3 pro 200 mg Tabakblatt-Frischgewicht und 15 min	Produziertes CO_2 in mm^3 pro 200 mg Tabakblatt-Frischgewicht und 15 min	RQ
Luft	43,2	52,6	1,22
Sauerstoff . .	51,2	51,2	1,00
		(Mittlerer Fehler der Resultate: 5%)	

Diese Messungen zeigen, dass der hohe RQ nur auftritt, weil der Sauerstoff nicht genügend in das Innere des Gewebes diffundieren kann, um einen Sauerstoff-Partialdruck aufrechtzuerhalten, der die aerobe Oxydation der Kohlehydrate erlaubt. Über die Muttersubstanz des Kohlendioxydes der ungenügend mit Sauerstoff versorgten Zellen steht die Diskussion noch offen.

Aus den oben erhaltenen Daten berechneten wir die Grenzschnittdicke d, die nötig ist, um die Gewebestückchen mit Sauerstoff zu versorgen, nach der Formel von WARBURG[8].

$$d = \sqrt{8 \cdot C_0 \frac{D}{A}}$$

Wobei: D = Diffusionskonstante. Wir verwendeten hier den einzigen uns bekannten Wert für pflanzliches Material, der von WANNER[9] an Keimlingswurzeln von *Allium cepa* gemessen wurde. A = Sauerstoffverbrauch des Gewebes pro Volumen- und Zeiteinheit. C_0 = Sauerstoffkonzentration an der Schnittgrenze.

Man findet so: Sauerstoffüllung der Gefässe: d = 0,35 mm, Luftfüllung der Gefässe: d = 0,16 mm.

Als kleinste Dimension unserer Gewebestückchen können wir die Blattdicke zu etwa ⅓ mm annehmen.

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Zürich, Spyristeig 35, 30. Oktober 1957.

Summary

It is demonstrated that the abnormally high respiratory quotient of the green tobacco leaf as described by various authors is due to an insufficient supply of oxygen to the tissues. In pure oxygen the quotient is 1·0.

[8] O. WARBURG, *Über den Stoffwechsel der Tumoren* (Berlin 1926).
[9] H. WANNER, Vjschr. naturf. Ges. Zürich *90*, 98 (1945).

4-Chlorotestosterone Acetate and Gonadotrophins

It has been shown that 4-chlorotestosterone acetate is a new steroid which presents high anabolic and low androgenic activity[1,2]; the new compound is devoid of progestative or estrogenic properties[1].

Owing to the possible relations, both chemical and biological, between 4-chlorotestosterone and sexual hormones, it seemed of interest to ascertain its effect on the gonadotrophic secretion.

For this purpose the parabiotic rat technique described by HERTZ and MEYER[3] has been followed. The castration of the male partner causes an increased secretion of gonadotrophins which pass across the 'parabiotic barrier' and stimulate the accessory sexual organs of the female partner.

Male and female rats averaging 100 g of body weight of the Long Evans strain were joined in parabiosis. The male partner was castrated on the day of operation. The steroid was injected into the castrated male subcutaneously in dose of 30 γ daily for 11 days.

At sacrifice, the weight of the prostate and seminal vesicles in the male and the weight of the uterus and ovaries in the female were recorded.

The results, summarized in the Table show: (1) 4-chlorotestosterone acetate does not significantly increase the weight of the prostate and seminal vesicles of the castrated male rat, while testosterone propionate at the same dosage level causes a significant rise of these organs; (2) 4-chlorotestosterone acetate does not inhibit the sharp increase of the weight of the uterus and ovaries of the parabiotic female rat. On the contrary, testosterone propionate completely inhibits the weight increase of the uterus and ovaries of the female rat: these organs in fact present the same weight as the organs of normal female rats of the same weight and age.

In order to reject the possibility of a preferential transfer of one steroid across the 'parabiotic barrier', we joined two male castrated rats together with the same technique and injected one animal subcutaneously with 30 γ daily of testosterone propionate for 11 days. This treatment increases the weight of the prostate and seminal vesicles of the injected rat, while it does not modify the sexual organs of the partner parabiotic animal.

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Laboratori Ricerche Farmitalia, Milano, November 18, 1957.

Riassunto

Il 4-clorotestosterone acetato presenta alta azione anabolica e scarsa attività androgena, è privo di proprietà estrogene o progestative.

Ricorrendo al metodo della parabiosi nel ratto si dimostra che il nuovo steroide non inibisce la secrezione ipofisaria di gonadotropine.

[1] G. SALA and G. BALDRATTI, Proc. Soc. exp. Biol. et Med., N. Y. *95*, 22 (1957).
[2] G. SALA, G. BALDRATTI, and R. RONCHI, Folia endocrin. (in press).
[3] R. HERTZ and R. K. MEYER, Endocrinology *21*, 756 (1937).

Effect of 4-chlorotestosterone and testosterone on gonadotrophin effect of parabiotic rats (mean organ weight ± standard errors referred to 100 g body weight)

Treatment	No. of pairs	Male castrated rat		Female rat	
		Prostate mg	Seminal vesicles mg	Uterus mg	Ovaries mg
Controls	8	7·7 ± 1·06	12·3 ± 1·87	149·7 ± 20	76·6 ± 10·4
4-chlorotestosterone acetate	7	12·2 ± 1·8	16·7 ± 0·76	147·8 ± 7·26	110·3 ± 12·6
Testosterone propionate . .	6	47·6* ± 8·13	70* ± 9·2	69·6* ± 17·1	35·5* ± 4·22

* Difference from controls highly significant ($P < 0{\cdot}01$).