

Chlorella (4), functions in photosynthesis as an oxidation-reduction catalyst.

Further experiments are in progress to identify the pigment or pigments responsible for the irradiation effect on the absorption spectrum of *Chlorella*.

References and Notes

- * Present address, Photosynthesis Research Project, University of Illinois, Urbana.
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2. ———, *Nature* **173**, 692 (1954).
3. H. E. Davenport and R. Hill, *Proc. Roy. Soc.* **B139**, 327 (1952).
4. R. Hill, D. H. Northcote, and H. E. Davenport, *Nature* **172**, 948 (1953).

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Negative Effects of Antibiotics on Thyroid Gland*

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Recently Calesnick, Harris, and Jones (1) reported that penicillin and aureomycin produced a goitrogenic and antithyroid effect in young rats as indicated by increased thyroid weight and decreased uptake of I^{131} . Both of these antibiotics were fed in concentrations of 1 mg/kg of food to only two groups of four rats each. Previous work in our laboratories (2, 3) failed to show that antibiotics exert any effect on the thyroid gland itself in either thiouracil-treated chicks or in Protamone-treated rats, although body weight losses produced by these drugs were partially counteracted by the use of antibiotics. Inasmuch as antibiotics are widely used in human and animal practice, it was considered important to determine further whether they could alter the activity of the thyroid gland.

Thirty immature male white rats of the Carworth strain were divided into three groups of 10 animals each and were fed a basal diet with or without antibiotics for 21 days as follows: (i) basal (3); (ii) basal

and 50 mg/kg potassium penicillin G; (iii) basal and 50 mg/kg aureomycin. On the 21st day, and 16 hr prior to sacrifice, each rat was injected intraperitoneally with 1.0 μ c of I^{131} . The thyroids were removed, weighed on a Roller-Smith balance, and counted for radioactivity by the standard procedure. In another phase of this study, 20-day-old White Leghorn cockerels were divided into two groups of 10 each and fed the following diets: (i) basal (2); (ii) basal and 2 g/ton penicillin. At the end of 5 wk, the chicks were killed and the thyroids were removed and weighed. Radioactive iodine was not given to the chicks.

It can be seen in Table 1 that neither penicillin nor aureomycin altered the size of the thyroids or the uptake of I^{131} by the young rats, although both antibiotics increased body weight. Penicillin also failed to alter thyroid weight in the chicks, but it did not affect body weight. An additional group of 10 chicks was fed 90 g of arsanilic acid per ton of feed, and this substance also failed to influence thyroid weight.

Thus, we have not been able to confirm the claim that penicillin and aureomycin are goitrogenic or decrease the uptake of I^{131} by the thyroids of young rats, even though 50 times more of these antibiotics was fed to our rats than in the experiment reported by Calesnick *et al.* (4). Neither was it possible to demonstrate any antithyroid action by penicillin in chicks. In general, these findings are in agreement with previous indications of a lack of direct action by antibiotics on the thyroid gland (2, 3).

References and Notes

- * Published with the approval of the Director, Michigan Agricultural Experiment Station, as journal article No. 1635.
1. B. Calesnick, W. D. Harris, and R. S. Jones, *Science* **119**, 128 (1954).
2. D. Libby and J. Meites, *Proc. Soc. Exptl. Biol. Med.* **79**, 370 (1952).
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4. In our opinion, the measure of I^{131} in the thyroids of young rats 16 hr after injection of the isotope is a more accurate index of thyroid function than one taken at 48 hr, as reported by Calesnick *et al.* (1), since the latter measure may be modified to a varying degree by the amount of thyroid output that has taken place.

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Table 1. Effects of antibiotics on thyroid gland of five groups of 10 animals each.

Treatment	Avg. body weight		Avg. thyroid weight		I ¹³¹ uptake (c/sec mg thyr.)
	Start (g)	Final (g)	Actual (mg)	per 100 g B.W. (mg)	
<i>Rats</i>					
Controls	82	157	13.1	8.35 ± 0.97*	185.6 ± 64.4*
Potassium penicillin G	83	168	14.1	8.42 ± 1.85	174.1 ± 74.1
Aureomycin	83	199	14.8	7.47 ± 0.99	233.8 ± 52.9
<i>Chicks</i>					
Controls	36	434	32.8	7.56 ± 1.27	
Penicillin	36	402	26.0	6.46 ± 0.61	

* Standard error of mean.