higher than that of normal persons, in spite of the massive coli colonization of the upper part of their gastrointestinal tract.

Therefore, it was supposed that achlorhydric gastric juices contain substances which may react with coli antigen, and, in the present examinations, the ability of the gastric juices of achlorhydrics to agglutinate red cells, sensitized with coli antigens prepared according to NETER et al.[2], was studied with the indirect haemagglutination test using TAKATSY's micromethod[3].The pH values of the achlorhydric gastric juice tested are between 6.2 and 7.8. Within this range of pH values we have not found any differences. The coli antibody titer of the serum of the same subject was also determined with the same method. From each sample of the gastric juices, saliva and sera, four parallel determinations were made. Results expressed in $-\log_2$ are recorded in the Table.

The Table shows that the achlorhydric gastric juices possess a capacity to agglutinate the red cells sensitized with coli antigen. This agglutinating effect of the achlorhydric gastric juices could be observed generally if the antibody titer of the serum of the same subject was above $-\log_2$ 4–5. No agglutination could be noticed, however, after the absorption of the achlorhydric gastric juices with specific antigen.

No.	Titer-$\log_2$			No.	Titer-$\log_2$		
	Serum	Gastric juice	Saliva		Serum	Gastric juice	Saliva
1	7.5	4.0	—	10	5.0	1.4	1.4
2	3.3	0.0	—	11	8.5	5.5	—
3	4.6	0.0	—	12	—	4.0	—
4	7.6	4.9	4.5	13	5.2	0.0	0.0
5	8.4	2.5	—	14	7.8	4.0	0.0
6	7.6	2.9	2.5	15	7.4	4.4	4.0
7	6.0	3.0	2.7	16	5.8	2.7	2.9
8	—	1.80	—	17	4.0	0.0	0.0
9	0.0	0.0	0.0				

Agglutination titers were determined with sheep red cells, sensitized with coli antigen. Coli strain was isolated from the gastric juice of a patient suffering from pernicious anemia. Sera, gastric juices and saliva were absorbed with normal sheep red cells before the examinations. Gastric juices contaminated with blood or bile were discarded. Not examined (—).

The titer of agglutination in the saliva of the same person, collected simultaneously, was nearly as high as that of the gastric juice.

It was further found that the achlorhydric gastric juices possess virus neutralization effect towards some enteropathogenic viruses in tissue culture[4].

The globulins usually responsible for antibody effect could be demonstrated immunelectrophoretically in the achlorhydric gastric juices. The precipitation band of albumin was absent in some of the achlorhydric gastric juices, but globulins were found to be present in each of them. On the basis of the above results, it can be supposed that substances causing the agglutination of red cells, sensitized with coli antigen, are coli antibodies, though further investigations are necessary to characterize them exactly.

Presumably the coli antibody of the gastric juice may also play a part in maintaining the balance between the organism and *E. coli* in achlorhydrics.

Zusammenfassung. Es wird festgestellt, dass der Magensaft von Menschen mit Achlorhydrie Schafblutkörperchen, die mit Coliantigen sensibilisiert worden sind, agglutiniert. Der Agglutinationstiter des Magensaftes hängt in erster Linie vom Antikörpergehalt des Serums ab.

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The Effect of Thyroxine on the Metabolism of Pyruvate

The hormones of the thyroid gland have a profound effect on the metabolic rate and also significantly influence the carbohydrate metabolism[1–4]. There are only a few observations concerning the effects of thyroid gland on pyruvate metabolism. Some authors found an increased level of circulating pyruvate in patients with thyrotoxicosis, or in animals treated with thyroxine[5,6]. The nature of this increase is not clear, and we therefore studied the metabolism of pyruvate in normal and thyroxine-treated rabbits, using the method of MOORHOUSE[7].

Method. Rabbits weighing from 2.5 to 3.5 kg were used. The experimental animals were divided into a normal group (13 rabbits) and a group of animals (6 rabbits) treated with thyroxine (0.25 mg/kg of body weight per day for 10 days). In the experimental period, the rabbits were kept on a constant diet and the tests were carried out after a 14–16 h fast. In such animals, the rate of disappearence of pyruvate from blood was determined from the decline of blood pyruvate concentration after the i.v. administration of sodium pyruvate (120–150 mg/kg body weight) into a marginal vein of the ear during 8–10 sec. The blood samples were drawn from the vein of the other ear before and in the 10, 15, 20, 25, 30, 35, 45th min after the end of injection and the blood pyruvate level was determined by the method of SLAVIK and MICHALEC[8] adapted for a small amount of blood (0.2 ml).

When the total blood pyruvate levels were plotted against time on a semilogarithmic scale, a straight line was obtained between 15 and 35 min of the test. The slope of this line shows the rate of disappearence of pyruvate from the blood which may be expressed

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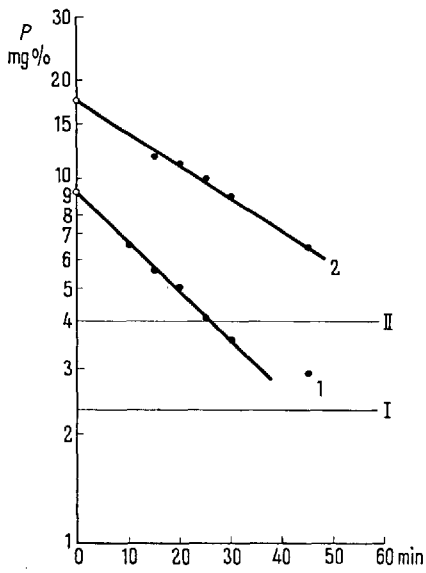
The values of fasting blood pyruvate level and the rate of assimilation of pyruvate in tissues in normal and thyroxine-treated rabbits

State	Number	Blood pyruvate level in mg%	p	Assimilation coefficient of pyruvate	p
Normal rabbits	13	2.48 ± 0.13	—	3.62 ± 0.16	—
Thyroxine-treated rabbits	6	4.60 ± 0.35	< 0.001	2.21 ± 0.23	< 0.01



The decline of the blood pyruvate concentration after i.v. administration of sodium pyruvate plotted against time on semilogarithmic paper. (1) normal rabbits, (2) thyroxine-treated rabbits, (I) fasting blood pyruvate level of normal rabbits, (II) fasting blood pyruvate level of thyroxine-treated rabbits.

numerically by the regression coefficient of the line[7,9]. This rate is identical with the rate of asimilation of pyruvate by all tissues, because the elimination of pyruvate by the kidneys during the test is negligible.

Results and Discussion. The results of our experiments are summarised in the Table and Figure. We observed an increase in fasting blood pyruvate level in rabbits after the administration of thyroxine. The decline of blood pyruvate level after the thyroxine treatment was slower than in normal animals and the slope of the straight line on semilogarithmic paper was less striking: therefore the rate of assimilation of pyruvate was decreased. This slower rate of disappearence of pyruvate suggests that the higher levels of pyruvate in the blood in hyperthyroidism may be caused not only by higher production of pyruvic acid by accelerated glycolysis but also by a delayed assimilation of pyruvate. In further experiments, we found also a decreased rate of disappearence of α-ketoglutarate from the blood in thyroxine-treated rabbits, but that of some other acids of the tricarboxylic acid cycle was normal or accelerated[10]. These facts suggest that there are some disturbances in α-ketoacids metabolism *in vivo* in thyrotoxic rabbits.

Zusammenfassung. Der Einfluss von Thyroxin auf den Stoffwechsel der Brenztraubensäure von Kaninchen wurde untersucht. Nach Verabreichung von 0,25 mg Thyroxin pro kg Körpergewicht täglich während 10 Tagen stiegen die Werte des Brenztraubensäurespiegels im Blut der nüchternen Tiere an. Thyroxin setzte die Abbaugeschwindigkeit der Brenztraubensäure im Blut herab und hemmte ihre Metabolisierung in den Geweben.

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Inverse Effect of Gibberellin and Amo-1618 on Growth, Catalase and Peroxidase Activity in Cucumber Seedlings

Cucumber seedlings' hypocotyls were previously used to assay gibberellins[1] and to study the effect of structure and concentration of quaternary ammonium compounds[2]. Gibberellin stimulated hypocotyl elongation in light-grown seedlings. This stimulation was directly related to concentration in the range between 10 and 1000 ppm. The effect of most quaternary ammonium compounds was inverse to that of gibberellin. The most active of these compounds was found to be 2-isopropyl-4-dimethyl-amino-5-methylphenyl-1-piperidine carboxylate methyl chloride, designated Amo-1618. It retarded both hypocotyl and radicle elongation, in relation to concentration. When applied together, gibberellin and Amo-1618 antagonize their opposite effect on hypocotyl growth[3]. About half the amount of gibberellin, on a molar basis, is needed to counteract the retarding effect of Amo-1618 on hypocotyl. Gibberellin did not affect the retardation of radicle elongation by Amo-1618.

KAMERBEEK[4] has reported that the dwarf type of plants show a greater peroxydase activity than their normal or giant types. MCCUNE and GALSTON[5] treated dwarf strains of peas and corn with gibberellin. This treatment increased growth rate and decreased peroxidase activity to the level found in normal strains of the indicated plants. The present report deals with the effect of chemical stimulation and retardation of growth on catalase and peroxidase activity of a normal plant.

Cucumber seeds var. Marketer were sown in petri dishes on filter paper previously saturated with distilled water, an aqueous solution of potassium gibberillate (GK), Amo-1618, or a mixture of both chemicals. Dishes were placed at constant temperature of 24° C and illuminated with 110 foot candles from fluorescent lamps for 8 h each day. After 5 days, seedlings were measured and dissec-

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