boxylase. In the antrectomized rats, the basal histamine level was lower than in the control rats[4,14]; however, they still responded to pentagastrin with reduction of the histamine level and activation of histidine decarboxylase (figure 2).

The role of the vagi for the mobilization of mucosal histamine and activation of histidine decarboxylase in the rat stomach has been a subject of some controversy. There have been claims that the vagus affects the histamine-storing cells directly, and that e.g. the response to feeding is the conjunctive result of vagal excitation and increased serum gastrin concentration[6,7]. In previous publications, we have argued that the vagi do not contribute directly to the activation of histidine decarboxylase after feeding and that the enzyme activation induced by vagal excitation is indirect, being the result of gastrin release[4,10,11]. In the present study, we show that in antrectomized rats feeding fails to induce lowering of gastric histamine, whereas the histamine-lowering capacity of pentagastrin is retained also in the absence of antral gastrin. We have previously shown that antrectomy does not prevent vagal excitation from stimulating gastric acid secretion[14]. Thus, neither vagal excitation nor any other physiological mechanism induced by the process of feeding is able to mobilize gastric histamine in the absence of antral gastrin.

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Salivary gland enlargement as a test for a new way of permanent isoproterenol application

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Summary. Low doses of isoproterenol, given permanently by a new application-method, show the same effects on salivary-gland enlargement of rats throughout approx. 6 days than 10fold higher concentrations given by previous workers as single daily injections.

Since it is common knowledge, that large doses of isoproterenol (IS) lead to a considerable enlargement of the salivary-glands of rats[2], we used this well known reaction as a test to prove the effectiveness of a new kind of permanent application of IS.

Material and methods. A number of male and female Wistar rats of approx. 250 g were divided into 3 groups. The animals were laparatomized, and plastic capsules (Brand, Cat.-Nr. 780500) with a volume of 2 ml filled with IS-solutions or with solvent (Aq. dest. with a drop of 0.1 N HCl) and sealed with a dialysis membrane (Union Carbide) were put into the abdominal cavity. After the wounds have been closed, the animals were put back into their cages.

The first group received capsules containing an IS-solution of 4 mg/ml, the second capsules with a 1 mg/ml solution and the control group capsules that were filled with solvent only.

The number of animals shown in the figures were killed on 9 consecutive days at 12 h, the right parotid and submaxillary gland and the capsules were removed. The glands were weighed, cut and stained (H.E.) for histological examination and the remaining IS-concentration in the depot-capsules was determined using a slightly modification of the Vulpian-method[3]. Of the collected data, $\bar{x}$ and SEM values were estimated and a capsule-output diagram was plotted by a Univac-494 Computer, by courtesy of the Rechenzentrum Graz.

Results. Concerning the 8-mg-capsules it could be said that, though the output rates of the first 2 days, as can be seen in figure 1, greatly exceed those of the following days, a measurable flow rate, that can still be considered effectful, is maintained up to the 6th day, while the output of the 2-mg-capsules is naturally smaller but also measurable up to 16 h (figure 1).

1 We are very much indebted to Mrs K. Stökl and Miss E. Stangl for their valuable technical assistance.

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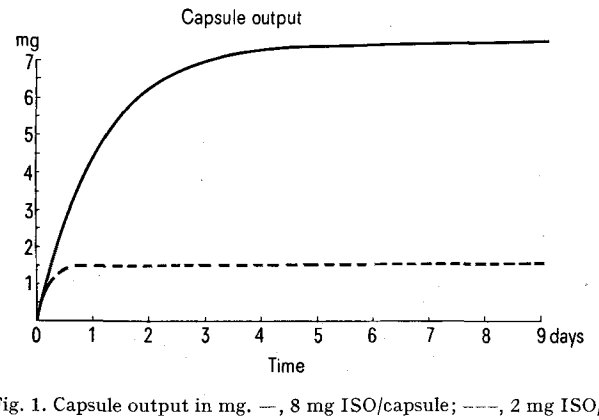

Fig. 1. Capsule output in mg. —, 8 mg ISO/capsule; – – –, 2 mg ISO/capsule. Plotted by an UNIVAC 494 Computer.

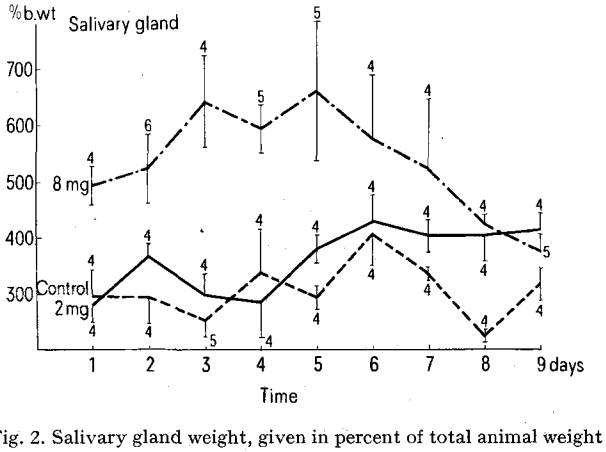

Fig. 2. Salivary gland weight, given in percent of total animal weight at killing time. – – –, Controls; —, 2-mg-capsules; –.–.–, 8-mg-capsules.

Figure 2 shows a highly significant salivary-gland enlargement during 7–8 days of the animals treated with the capsule containing the 8-mg-solution.

The salivary-gland weights of the rats treated with a capsule containing 2 mg IS were not distinguishable from the controls. Nevertheless, moderate cell-enlargement and mitosis could be seen in the glands of these animals, while substantial cell-proliferation and mitotic activity during 6 days occurred in the animals treated with the 8-mg-solution.

Discussion. The method of giving daily injections of catecholamines has the disadvantage that single doses are catabolized by the animal within a few hours (the half-life of catecholamines in plasma estimated e.g. by Cohen[4] being 1–2 min; Labhart[5] described it to be approximately 10 min) while a low but constant IS-level can be maintained for some days by our method of application. Therefore, if given by single daily injections, a 10fold dose[6] seems to be needed to cause the same effect on salivary-gland enlargement as shown in figure 1.

Although the application of the capsule containing 2 mg of IS has comparatively small visible effect on our target-object, rather striking changes could be seen concerning myocardial histology and some metabolic parameters as will be shown in a following communication. These facts lead us to the opinion that the IS-level causing salivary-gland enlargement can be much lower than hitherto supposed, if it is only kept up for some time.

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Androgenic properties of gibberellic acid in the chick comb bioassay

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Summary. Gibberellic acid stimulates the growth of the comb in the male chicks, but is ineffective in females. Estrogen prevents gibberellin-induced stimulation.

Gibberellins, potent plant hormones, are known to be relatively harmless for animals[1]. There exists evidence that gibberellins might be biologically active in animal organisms. Young animals seem to thrive on the addition of gibberellins to their diet. Gibberellic acid (GA_3) increased the growth of tadpoles[2] as well as the metamorphosis of locusts[3]. Chicks[4] and pigs[5] grew better on fodder containing GA_3 and improved their utilization of feed for a more efficient weight gain. When male mice and rats were injected daily with GA_3 shortly after weaning, their weight gain was consistently higher than that of control animals[6]. The thyroid and adrenal glands were especially well developed and the urinary gonadotropin excretion increased by 50%. An earlier study[7] described experiments with wheat germ oil in which the plant material possessed estrogenic, androgenic and gonadotrophic activity as assessed by a series of biological tests. The ketonic fraction of wheat germ oil was specifically indicated as biologically active. It increased the chick comb weight and the seminal vesicle weight in castrated rats. In other experiments with castrated rats[8] GA_3 partially restored the weight of the prostate and was particularly effective in restoring the size of the levator ani muscle. We report here that GA_3 is also effective in the chick comb growth test which is widely used for assessment of androgenic activity.

White leghorns were divided into groups of 25 birds and injected s.c. every 3 days with 0.2 ml of different concentrations of GA_3 and/or estradiol (E_2) starting 3 days after hatching and ending on the 35th day. The compounds were dissolved in 1:1 glycerol-saline (0.9%) mixture with the addition of 0.5% $NaHCO_3$. Total dose from 10 injections amounted to 20 mg, 2 mg and 0.2 mg GA_3 alone, or in

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Chick comb weight after gibberellin (GA_3) and estradiol (E_2) treatments

Treatment[a]	Males No. of birds	Comb weight (mg)[b]	Females No. of birds	Comb weight (mg)[b]
Control	13	1026 ± 468	12	157 ± 26
0.2 mg GA_3	10	1507 ± 1237	15	152 ± 21
2 mg GA_3	13	1927 ± 860[d]	11	158 ± 40
20 mg GA_3	16	1393 ± 352[c]	9	177 ± 49
0.2 mg E_2	11	523 ± 289[d]	14	162 ± 81
0.2 mg GA_3 + 0.2 mg E_2	11	486 ± 307[d]	14	153 ± 40
2 mg GA_3 + 0.2 mg E_2	14	407 ± 357[d]	11	160 ± 26
20 mg GA_3 + 0.2 mg E_2	11	531 ± 446[c]	13	146 ± 30

[a] Total dose of GA_3 and E_2 listed. [b] Average comb weight ± SD. The difference between control group and treatment is significant to [c] $p < 0.05$, or to [d] $p < 0.01$ by t-test for unequal sample sizes.