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## Effect of Potassium Iodide on Proliferative Activity of Thyroid Gland in Guinea Pigs.

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In our investigations we attempted first, to determine in a quantitative manner the increase in mitotic activity which is caused in the thyroid of guinea-pigs fed with potassium iodide, and secondly, we intended to determine whether there was any relation between the quantity of KI and the proliferative activity in the acini. The experiments were carried out on 4 sets of guinea pigs weighing on the average between 350 and 450 gm.; some of these were fed with varying quantities of potassium iodide for different periods of time, while others were kept as controls. The first set of animals received a daily dose of 0.01 gm. KI, the second set 0.05 gm. KI, and the third set 0.1 gm. KI. The fourth set was kept as controls and did not receive any potassium iodide. The iodide was administered in the form of pills fed by mouth, great care being taken that all of the substance was swallowed. In different groups of animals the feeding was continued for periods of 10, 15, 18, 20 and 30 days respectively, and at the end of each period the animal was killed with chloroform, and both lobes of the thyroid excluding the isthmus were immediately removed after the death of the animal and at once fixed in Zenker's solution. The glands were cut in complete serial sections and stained with eosin and hematoxylin. The average number of sections obtained for every gland varied between 450 and 500; mitoses were counted in every tenth section in a very exact manner, the number of mitoses thus obtained was multiplied by 10 in order to find the total number of mitoses in the thyroid gland.

We may state that first, the administration of KI leads to an exceedingly pronounced increase in the proliferative activity of the thyroid gland. While in normal guinea pigs not fed with KI the average number of mitoses varied approximately between 100 and 200 in the whole gland, in the animals fed with KI the number may be as high as 8000 and quite commonly reached figures of 4000 and 5000. Secondly, we found that there is a definite relation between the amount of KI fed and the mitotic activity of the thyroid gland which results therefrom. The intensity of mitotic proliferation was

smallest in the set fed with 0.01 gm. and was greatest in the set fed with 0.1 gm. KI; it was intermediate in the guinea pigs which received 0.05 gm. As to the activity of phagocytes we found it greatly increased in the thyroid glands of the animals fed with KI, and in consequence of this increased activity on the part of the phagocytes the softening of the colloid took place in some acini. Otherwise there was no striking difference found in the character of the acini, colloid and epithelium between the controls and the animals fed with potassium iodide. After feeding with KI through a period of 30 days, the mitotic activity has ceased altogether; this condition was associated with and probably caused by the taking up of fluid on the part of the colloid, which just increased in size and exerted pressure on the acini. As a result of this increased pressure the acini became larger, and the epithelium flattened out, and in other cases adjoining acini coalesced.