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experimental groups in experiment No. 2. Cyproterone acetate stimulated thyroid radioiodine uptake in both experiments. Oestradiol alone produced no significant effect but significantly inhibited the effect of cyproterone acetate.

The mechanism by which cyproterone acetate produced an increase in thyroid radioiodine uptake and the cause of the unexpected blocking effect of simultaneous oestrogen administration are unknown. Theoretically, changes in the availability of binding sites for thyroid hormones might be one possibility; none of the other steroid hormones produce such an increase in thyroid radioiodine uptake, however[20].

Zusammenfassung. Die Wirkung des Cyproteron acetates auf die J^{132}-Aufnahme der Rattenschilddrüse wurde untersucht. Die Radiojodaufnahme der Schilddrüse wurde durch diese Substanz erhöht, wobei gleichzeitig eine mässige Zunahme des Schilddrüsengewichtes festgestellt werden konnte. Gleichzeitige Verabreichung von Oestradiol hob diesen Effekt auf.

V. Schreiber and J. Roháčová

Laboratory for Endocrinology and Metabolism, Faculty of General Medicine, Charles University, Praha 2 (Czechoslovakia), 15 January 1971.

Neurosecretion in Thyroidless *Xenopus laevis* Larvae

Giant non-metamorphosing larvae, showing an inborn lack of the thyroid gland can be found among laboratory-bred *Xenopus laevis*[1]. These larvae attain a size of about 12 cm, remaining at the premetamorphic stage for several months (Figure 1). Histological examination[1] showed that in such animals the thyroid gland is absent both from its normal position and possible ectopic sites.

The brains of 5 non-metamorphosing giant *Xenopus laevis* 6-month-old larvae were examined histologically, following Gomori's chrome haematoxylin phloxin method for the neurosecretory material. The brains of these animals were much larger than in larvae of corresponding developmental stage (49 according to Nieuwkoop and Faber[2]). They had a typical larval shape, the brain walls being thin and compensated by distended brain ventricles.

The pars magnocellularis of the preoptic nucleus, i.e. the hypothalamic neurosecretory centre, was developed to a stage comparable to that shown by normal larvae at the prometamorphic period. The neurosecretory cells were only slightly larger than surrounding non-secretory neurons. The neurosecretory material was very scanty and present only in the perikarya. The Nissl substance in the neurosecretory cells was abundant. Normal,

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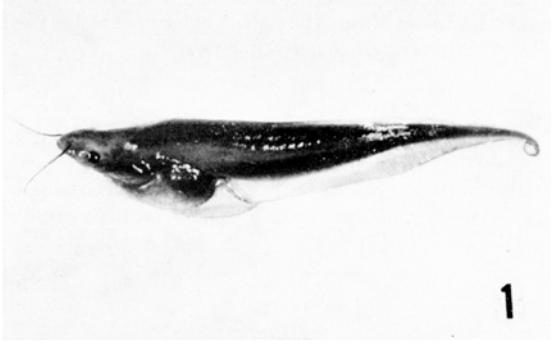

Fig. 1. Thyroidless larva, 6 months after hatching. Developmental stage 49. ×0.8.

Fig. 2. Normal littermate. ×0.8.

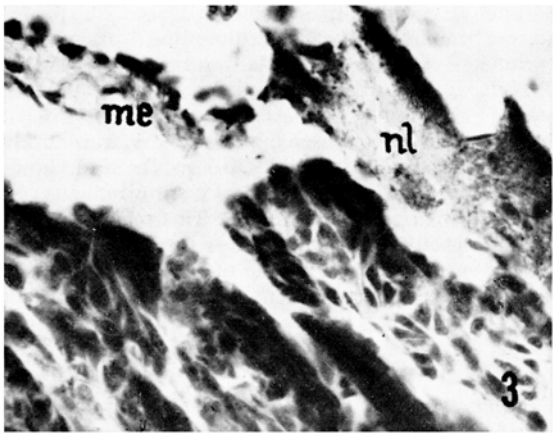

Fig. 3. Median eminence (me) and neural lobe (nl) of thyroidless larva. The median eminence is thinner than in metamorphosed littermates, the neural lobe well developed. Chrome haematoxylin phloxin (CHP). ×500.

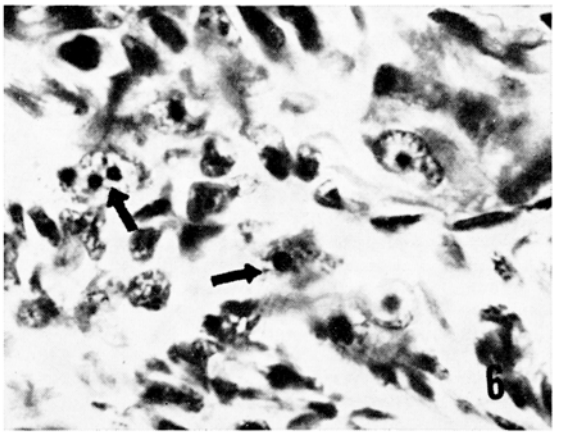

Fig. 6. Fragment of pars distalis of thyroidless larva. Cell nuclei are of uneven size, some of the nucleoli being very large (arrows). CHP. ×1100.

Fig. 4. Median eminence (me) and neural lobe (nl) of a normal, 6-month-old animal. CHP. ×500.

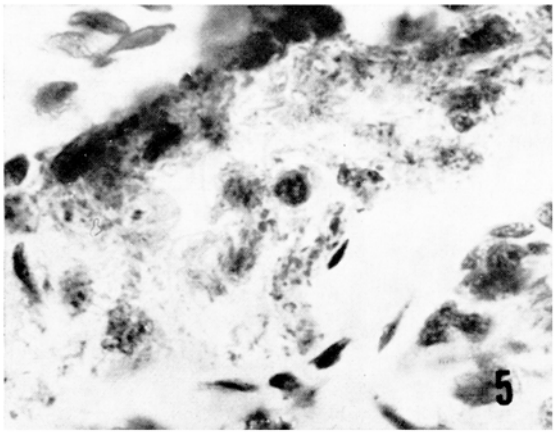

Fig. 5. Neural lobe of thyroidless larva at higher magnification; it contains fairly abundant neurosecretory material. CHP. ×1100.

metamorphosed littermates (Figure 2) had, of course, a much better differentiated pars magnocellularis of the preoptic nucleus. However, it was also poor in neurosecretory material. The brains of normal larvae at stage 49 show a poorly differentiated neurosecretory hypothalamic centre without traces of neurosecretory material in the chrome haematoxylin method[3].

The median eminence of the thyroidless animals was thinner than in normal, metamorphosed littermates (Figures 3 and 4). Visible neurosecretory granules were present in the distal part of the median eminence. The neural lobe of the thyroidless animals was well developed (Figures 3 and 5), containing fairly abundant neurosecretory material, sometimes in the form of comparatively large granules.

The pars distalis of the hypophysis differed from that observed in normal, metamorphosed animals of the same age. It was larger, the secretory cells being almost exclusively large, elongated chromophobes. The most prominent feature of the pars distalis cells were large nuclei and very large nucleoli (Figure 6).

These observations show that: 1. the neurosecretory system develops to a certain degree even in the complete absence of the thyroid gland, 2. the neurosecretory system in the thyroidless larvae is hypofunctional and 3. the thyrotropic activity of the hypophysis is high, its maturation being apparently independent of the presence of the thyroid gland.

The present results are in favour of Goos[4] hypothesis that the thyroid gland has an unspecific stimulatory morphogenetic influence on the neurosecretory system but, at the same time, they do not support the positive feedback mechanism theory of ETKIN[5].

Zusammenfassung. Befunde an schilddrüsenlosen Xenopuslarven machen wahrscheinlich, dass die Reifung der neuroendokrinen Achse und damit der thyreotropen Aktivität der Hypophyse von der Schilddrüse unabhängig sind.

Z. SREBRO

Department of Biology and Embryology, Medical Academy of Cracow, ul Kopernika 7, Krakow (Poland), 16 December 1970.

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