Table III. Effect of hypophysectomy (HX) and ACTH (4 units/rat/day, s.c.) for 10 days on the monoamine oxidase (MAO) activity of various rat tissues

Organ or tissue	Sham + V	HX + V	Sham + ACTH	HX + ACTH
Spleen	4.2 ± 0.1	3.2 ± 0.1	3.8 ± 0.1	2.1 ± 0.2
Kidney	3.3 ± 0.1	1.4 ± 0.1	3.2 ± 0.2	1.4 ± 0.1
Hypothalamus	5.8 ± 0.2	5.6 ± 0.9	4.9 ± 0.3	5.3 ± 0.1
SCG	0.9 ± 0.1	0.1 ± 0.1	0.1 ± 0.1	0.1 ± 0.1
Vas deferens	6.9 ± 0.4	6.4 ± 0.3	6.9 ± 0.3	6.6 ± 0.3

SCG, superior cervical ganglion, μM indoleacetic acid/pair/h ($\times 10$).
Significance of differences: HX + V vs. Sham + V, spleen and kidney, $p < 0.001$. Sham + ACTH vs. HX + ACTH, spleen and kidney, $p < 0.001$. Sham + V vs. Sham + ACTH, spleen and hypothalamus, $p < 0.05$. HX + V vs. HX + ACTH, spleen, $p < 0.05$. Sham, pooled age matched and weight matched, sham-operated rats; V, vehicle. MAO activity is expressed as μM indolacetic acid/g/h ± SEM. 6 rats were used in each HX group and 12 rats in each sham group.

different spectrum of effects from HX (Table I). Thus, the decreased level of plasma steroids following HX[17] seem insufficient to mimic complete adrenal removal. Also, the total loss of pituitary endocrine control and continued aldosterone secretion are highly likely to be crucial influencing factors.

The kidney proved to be the most sensitive to HX, but the decrease in MAO activity was unresponsive to ACTH. This resistance is unlikely to be due to insufficient ACTH dosage, since adrenal weight was increased (Materials and methods) and MAO activity was affected in other organs. In contrast, HX produced only a minor decrease in heart MAO which seems related to growth retardation. However, ACTH replacement induced a dramatic decline. A speculative interpretation is that HX resulted in the loss of a hormone or hormones which function to enhance cardiac MAO (e.g., thyroid hormones[4]). Concomitantly, ACTH, and perhaps other hormones acting to decrease cardiac MAO were also lost. The net result would be little or no change. However, ACTH replacement would then reveal a marked depression. The failure of ACTH to produce vast changes in heart MAO activity of intact rats could be due to compensatory hormonal readjustments. Similar changes were found in the spleen and further experiments are required to elucidate their precise mechanism(s). The decreased adrenal MAO after HX may be related to atrophy, since most of the enzyme is cortically located[18].

Denervation studies in the heart and kidney show that the vast majority of MAO is extraneuronally located[19–21]. Thus, a marked fall in the MAO activity in these organs after HX and/or ACTH must be almost entirely representative of the extraneuronal enzyme(s). In contrast, studies in AX rats suggest that intraneuronal MAO is predominantly affected[14, 22, 23]. Thus, as well as gross target organ differences between pituitary influences and AX, and different directional changes in commonly affected organs, the locus of the affected MAO also seems to differ.

Summary. Changes in MAO activity after hypophysectomy (HX) are not due to adrenal insufficiency. ACTH failed to reverse the effects of HX and enhanced the depression of cardiac and spleenic MAO. The data suggests both facilitatory and inhibitory effects of pituitary hormones on MAO activity.

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Ist allein die Glandula ecdysalis die Häutungsdrüse von *Lithobius*?

Is only Glandula Ecdysalis the Ecdysial Gland of *Lithobius*?

Die Häutungsdrüsen von *Lithobius forficatus* L. sind im hinteren Kopfbereich und den beiden ersten Rumpfmetameren gelegen[1]. Elektronenmikroskopische Untersuchungen wiesen diese «Lymphstränge» nicht nur als endokrine Drüsen aus, sondern machten auch einen Zusammenhang mit dem Häutungsgeschehen deutlich[2]. Durch Ausschaltexperimente[1] konnte allerdings nicht mit völliger Sicherheit ausgeschlossen werden, dass neben den Gl.ecdysales auch andere Organe dieses Körperbereichs das Häutungshormon synthetisieren und abgeben. Als solche müssen z.B. die als Speicheldrüsen angesehenen Gl.mandibulares, denen sich die Gl.ecdysales anlagern, sowie die ebenfalls paarigen Gl.maxillares II, die im Kieferfussmetamer lateral von ersteren zu finden sind, in Betracht gezogen werden.

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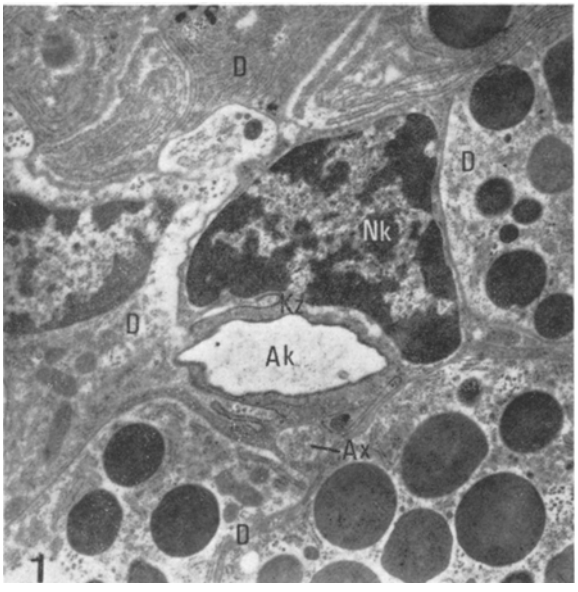

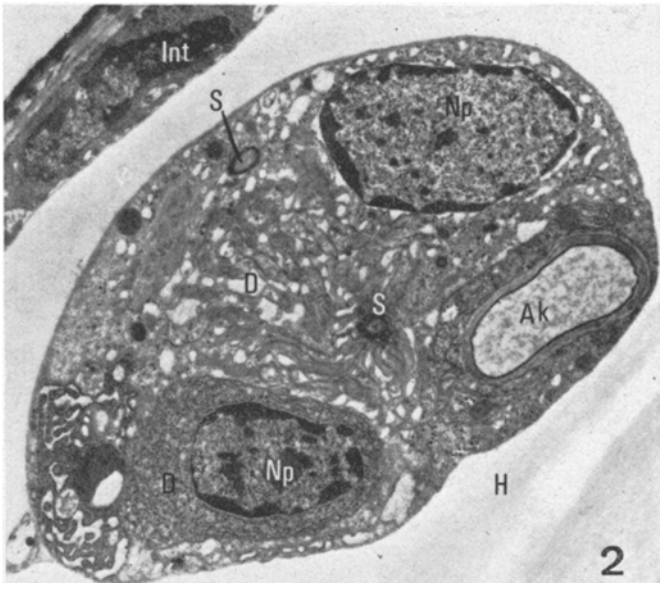

Fig. 1. Schnitt durch die Glandula mandibularis. Ak, Hauptausführkanal; Ax, Neurosekretorisches Axon; D, Drüsenparenchymzellen mit zahlreichen Sekretvakuolen, granulärem ER und Mitochondrien; Kz, Kanalwandzelle; Nk, Kern der Kanalwandzelle. ×13800.
Fig. 2. Schnitt durch die Glandula maxillaris II. Ak, Hauptausführkanal; D, Drüsenparenchymzellen unterschiedlicher Funktionsphasen; H, Haemocoel; Int, Integument; Np, Kerne von Parenchymzellen; S, quergeschnittene Seitenkanäle. ×7500.

Beide Drüsenpaare waren von FAHLANDER[3] als exokrine Drüsen beschrieben worden. Die Funktion der kleinen Gl. maxillares II musste aber unklar bleiben, weil ihre Ausführgänge caudal von den Coxen der 2. Maxillen nach aussen, also nicht in den Praeoralraum münden sollen.

Die Ultrastruktur kann sichere Auskunft geben, ob eine exokrine oder eine endokrine Drüse vorliegt[4]. Bei den fraglichen Organen handelt es sich eindeutig um exokrine Drüsen (Figuren 1 und 2). Neben den Sekret produzierenden Parenchymzellen (D), deren Kerne (Np) sich durch gleichmässig verteiltes Chromatin auszeichnen, findet man typische Kanalwandzellen (Kz). Letztere bilden ein System aus zuführenden Seitenkanälen (S) und einem Hauptausführkanal (Ak). Alle Kanäle sind mit einer kutikularen Intima ausgekleidet. Von den Drüsenparenchymzellen abgegebenes Sekret wird in relativ enge Interzellularspalten ausgeschleust, die Anschluss an das ausführende Kanalsystem finden.

Eine eingehende Beschreibung der Ultrastruktur soll zu einem späteren Zeitpunkt gegeben werden[5]. Hier sei nur der Nachweis erbracht, dass die erwähnten Drüsen in der Tat exokrin sind, und dass nach unserem bisherigen Wissen demnach allein die Gl.ecdysalis als Häutungsdrüse von *Lithobius* zu gelten hat.

Summary. Electronmicroscopic investigations of the glandula mandibularis and gl.maxillaris II of *Lithobius forficatus* demonstrate the exocrine character of these glands. Therefore, gl.ecdysalis remains the sole ecdysial gland of this centipede.

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Activities of Kidney Decarboxylases of Histidine and Ornithine in Adrenalectomized Mice Substituted with Cortisone

Formation of putrescine by decarboxylation of ornithine occurs, like histamine formation by the agency of histidine decarboxylase, in all mammalian tissues.

Little is known of the control of the relevant decarboxylase activities in physiological conditions. In suitable experiments, the activities of these enzymes can be greatly enhanced or lowered. Glucocorticoid hormones have tentatively been suggested as controlling these enzymic activities. Increase of ornithine decarboxylase activity is brought about in animals subjected to strain[1]. A stabilizing influence of the adrenal gland is suggested by the fact that adrenal steroids released in 'stress' oppose some untoward effects of histamine. Cortisone is reported to protect adrenalectomized rats from traumatic shock[2].

In earlier work from this laboratory, the kidney of the female mouse was shown to be a suitable target organ in

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