= 30 + 50 + 20 + 1 (V/V)) in zweidimensionalen Dünnschichtchromatogrammen.

Man entwickelt die Platten (20 × 20 cm) zunächst senkrecht zur Streichrichtung mit dem ammoniakalischen Laufmittelgemisch A und dann in der zweiten Richtung wahlweise mit dem Gemisch B (Figur 3) oder C (Figur 4). Die Kieselgel-G-Schicht muss nach dem ersten Lauf durch 10 min Erhitzen auf 100°C reaktiviert werden, da sich ansonsten die Flecke mit grösseren Rf-Werten als die Referenzsubstanzen am Rande der Platten bewegen und sich in der Nähe der Lösungsmittelfront zusammendrängen. Zersetzung der DANS-Aminosäuren haben wir unter dieser Behandlung nicht beobachtet. Die Fleckenkarten sind gut reproduzierbar, so dass die Aminosäuren auf Grund ihrer Lage auf dem Chromatogramm und zusätzlich durch mitgeführte Vergleichssubstanzen identifiziert werden können.

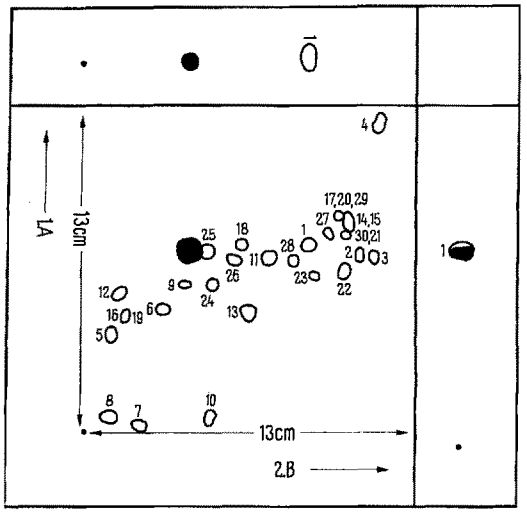

Fig. 3. Zweidimensionales Dünnschichtchromatogramm eines Gemisches aus 30 DANS-Aminosäuren (vgl. Tabelle). 1. Laufrichtung: Lösungsmittelgemisch A (Methylacetat + Isopropanol + konz. NH_3 = 45 + 35 + 20 (V/V)). 2. Laufrichtung: Lösungsmittelgemisch B (Chloroform + Methanol + Eisessig = 75 + 20 + 5 (V/V)).

Die Platten betrachtet man am besten in noch feuchtem Zustand unter der UV-Lampe, da die Fluoreszenzintensität der Flecke nach dem Trocknen stark abnimmt.

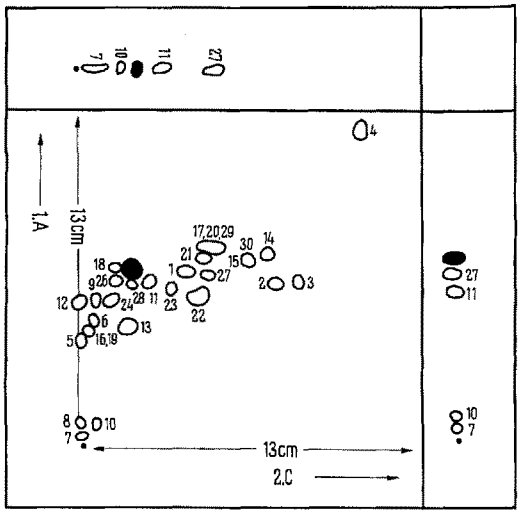

Fig. 4. Zweidimensionales Dünnschichtchromatogramm eines Gemisches aus 30 DANS-Aminosäuren (vgl. Tabelle). 1. Laufrichtung: Lösungsmittelgemisch A (Methylacetat + Isopropanol + konz. NH_3 = 45 + 35 + 20 (V/V)). 2. Laufrichtung: Lösungsmittelgemisch C (Chloroform + Äthylacetat + Methanol + Eisessig = 30 + 50 + 20 + 1 (V/V)).

Summary. Some solvent systems are described for the separation of 1-dimethyl-amino-naphthalene-5-sulphonyl-amino acids on thin layer chromatograms. 10^{-10} mole per amino acid can be detected on a two-dimensional chromatogram, when the yellow fluorescence of these compounds is excited by a UV-lamp.

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Morphological Modifications in the Adrenal Medulla after Decortications of Different Extent in the Left Cerebral Hemisphere

The influence of the vegetative nervous system on the adrenomedullary secretion has been known for some time. STEWART and ROGOFF[1] proved that the adrenal denervation produces a suspension of the adrenaline secretion. KAHN[2] observed that, upon sectioning the left major splacnic nerve, the adrenal medulla of that side did not show the same changes due to insulin shock as on the opposite side. Similar results were obtained by CIMINATA[3], CROWDEN and PEARSON[4], GEIGER[5], HILLARP[6], etc. The hypothalamus, which is the vegetative centre par excel-

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[3] A. CIMINATA, Abh. neur. Inst. Univ. Wien *28*, 95 (1926).
[4] G. P. CROWDEN and M. G. PEARSON, J. Physiol. *65*, 25 (1928).
[5] E. GEIGER, Klin. Wschr. *2*, 1313 (1933).
[6] N. HILLARP, Acta Anat. (Basel) *3*, 153 (1947).

lence, is an important link in this neural control of the adrenal medulla as deduced from the findings of MAGOUN and RANSON[7] and FOLKOW and VON EULER[8]. It is logical, nevertheless, to suppose that the cerebral cortex is in this case, as in so many others, the last link in the chain of neuroendocrine interrelations. This hypothesis is favoured by the results of the following experiments.

Material and methods. We used four groups of guinea-pigs. In the first two groups we removed a more or less large cortical zone of the left hemisphere of the animals. The animals of the first group (6 guinea-pigs) were killed one month after the operation without having been subjected to any painful stress. The animals of the second group (17 guinea-pigs) were also killed one month after the operation, but these were subjected to a painful stress (pin pricks in both posterior extremities during 10 min) 2 h before. The other two groups were used as control animals. The third group received a painful stress 2 h before being killed, exactly as the guinea-pigs of the second group. The control animals of group IV (10 guinea-pigs) were not subjected to any painful stress. All guinea-pigs were killed by decapitation at the same hour and in the same conditions. We judged the functional state of the adrenal medulla by means of the histological, histochemical, and caryometric study of its cells. Hematoxiline-eosine, HOPA, PAS, and Schmorl staining methods were used. One hundred nuclei were measured in each case with the aid of a Zeiss micrometric screw eyepiece and an immersion lens. The total magnification was 1,600.

Results. No marked differences were observed between the adrenal medulla from animals of the groups I and IV, both in the appearance of the cytoplasm and the nuclear volume.

In 9 of the 17 guinea-pigs that constituted group II, the results obtained were interesting. The left adrenal medulla, that is, that of the same side as the cerebral decortication, showed the same normal picture as that of the groups I and IV animals. The right medulla, on the contrary, presented a notably reduced pheochrome-reaction and most of the cells showed vacuoles, some of them very large, occupying the largest part of the cytoplasm. Their nuclear volume was 29.87% greater than that of the left adrenal cells.

The morphologic picture of both adrenal medullae of the animals of group III (intact guinea-pigs subjected to painful stress) resembled very closely that found in the right side of the animals of group II, just referred to.

The remaining 8 animals of group II presented a different behaviour. In 6 cases both medullae were similar to those of groups I and IV, that is to say, with no modification in spite of the stress. Finally, the other two guinea-pigs of the group had the same modifications of adrenal medulla of both sides as the animals of group III.

These findings suggest the following interpretation. Painful stress produces a liberation of the adrenomedullary secretion, resulting in a diminution of the pheocromy and the formation of vacuoles (STAEMMLERS[9], HILLARP[6]). In animals submitted to a decortication on the left cerebral hemisphere, subjected to painful stress, only the right adrenal medulla reacts. This indicates, on the one hand, that the cortex exercises a notable influence on the adrenomedullary secretion under this type of stress, and on the other hand, that the pathway is apparently homolateral, and does not reach centres of diffused projection. This affirmation coincides with that of FERGUSON et al.[10].

The destruction of the motor area being the only common feature of the cerebral decortication of the 9 animals referred to, we are prone to believe that this is the area in which the cortical secretory impulses to the adrenal medulla originate. This point is confirmed again by the fact that in the two cases in which both adrenal glands reacted to the painful stress the motor cortex was partially preserved.

We have not found any acceptable explanation for the absence of reaction in the right adrenals of the remaining 6 guinea-pigs.

Résumé. Les cobayes avec destruction du cortex frontal gauche présentent, 2 h après l'application d'un stress douloureux, une morphologie médullosurrénal nettement différente entre la glande du côté gauche et droit. La médullaire gauche ne montre pas de modifications appréciables. Au contraire, la médullaire droite montre des modifications qui indiquent une réponse au stress douloureux.

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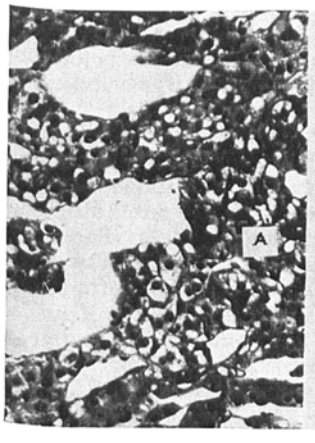
Departamento de Anatomía, Facultad de Medicina, Universidad de Navarra, Pamplona (España), June 3, 1964.



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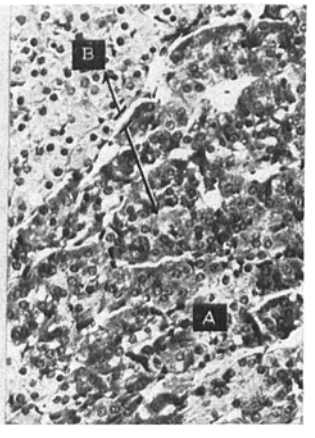

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Fig. 1. Adrenal of a guinea-pig of group II. Medulla (A) with a great number of vacuoles and large sinusoids.

Fig. 2. Adrenal of a guinea-pig of group IV. Medulla (A) showing cells with uniformly stained cytoplasm without vacuoles, (B) adrenal cortex.

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[10] R. W. FERGUSON, B. FOLKOW, M. G. MITTS, and E. C. HOFF, J. Neurophysiol. *20*, 329 (1957).