Zusammenfassung. Aus Ranikhet-Virus (dem indischen Stamm des Newcastle disease virus) wurde eine infektiöse Ribonukleinsäure isoliert. Diese ist sehr empfindlich gegen Umweltseinflüsse. Verdünnung, Lagerung bei – 20°C und Behandlung mit Ribonuklease führen zum Verlust der Infektivität. Nach Behandlung der isolierten Ribonukleinsäure mit Viruslipid oder Lipid aus Mäusegehirn bleibt die Infektivität aber auch nach Verdünnung oder sogar nach Behandlung mit Ribonuklease erhalten.

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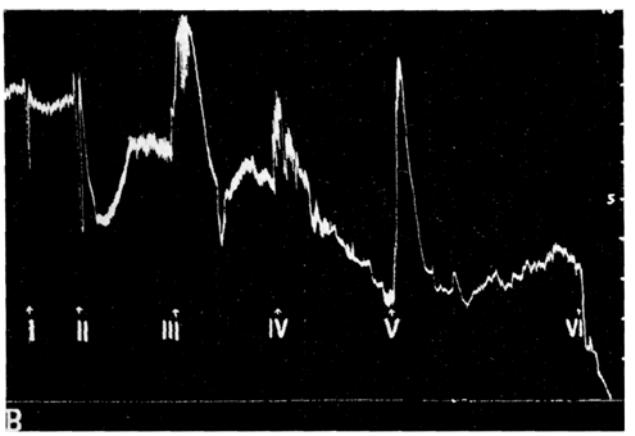
On the Presence of Adrenaline-Sensitive Receptors at the Cerebral Cortex of the Rabbit

Previous investigations have shown that the topical application of adrenaline to the cerebral cortex of the rabbit elicits an immediate blood pressure rise, and that this reaction is susceptible of undergoing significant changes under the influence of psychotropic substances[1]. Numerous experimental approaches have been devised in an attempt to determine the nature (central or peripheral) of that response. It has thus been demonstrated that size and duration of the cortically induced pressor effects closely depend on the area treated. They are optimal after median fronto-parietal application (parietal and ventral parts of the area praecentralis agranularis), smaller and more transient on the frontal (area praefrontalis granularis), and generally negligible on the temporal and occipital regions (area striata, area spleniaris), though there are no particular differences in the vascular supply between these zones. It has further been noticed that the hypertensive reaction gradually increases after repeated applications to the same area, and that such a contact has a sensitizing effect on subsequently treated cortical fields, even on those which were primitively refractory to the adrenergic transmitter[2]. The cardiovascular effect initiated by cortical administration could be differentiated from that produced by intravenous injections of the same substance, through the injection of a massive adrenaline dose (0.75 to 1.0 mg) which led to a biphasic antagonistic modification of both responses (increase of the intravenous and decrease of the cortical effect in the first, progressive increase of the cortical and definite decrease of the peripheral action, in the second phase of the experiment)[3]. It has also been found that the cortically induced hypertension disappears after surgical disconnection of the treated area or destruction of the anterior hypothalamus. In the latter case cerebro-cortical applications continued to provoke oxytocic manifestations on the uterus *in situ*[4]. These data already pointed to the existence of a limited cortical region upon which adrenaline may exert an adequate stimulus.



Rabbit blood pressure: Animal anaesthetized with ethyl-urethane and injected with Regitine (1 mg/kg). – (I): intravenous injection of 10 µg of adrenaline bitartrate, (II) and (VI): i.v. injection of 30 µg of adrenaline bitartrate, (IV): i.v. injection of 0.5 U of Pitressin, (III) and (V): topical application of a 5% solution of adrenaline bitartrate to the cerebral cortex.

In view of possible physiological or physio-pathological implications of this reaction, it seemed of interest to accumulate further evidence of its essentially central character by completing and controlling these observations through the use of discriminating pharmacodynamic procedures based on the action of some structurally different 'adrenergic blocking agents'. Piperazone (piperidomethyl-3-benzodioxane), Regitine (2(N-*p*-tolyl-N-*m*-phenylamino-methyl) imidazol), and Dibenamine (N.N. dibenzylchloro-ethylamine) were selected. The former two drugs have rapid, but short effects, the latter produces retarded, but long-lasting actions, all three being supposed to attack essentially peripheral receptor sites.

The assays are carried out on male adult rabbits under light (intravenous) urethane anaesthesia. The hemispheres are exposed, the dura is opened, and mean blood pressure measured via a cannula in the left femoral artery. The cortex is carefully rinsed with body-warm Ringer until complete disappearance of all traces of blood. Then a very small piece of filter-paper (3 to 5 mm²), moistened with a freshly prepared 5% solution of adrenaline bitartrate in Ringer is placed on the left fronto-parietal zone. After a short contact (generally not more than 30 sec), the systemic blood pressure rises, maintains a maximum for some minutes, and then reaches again its initial level.

However, in the following experiments, conducted during a period of reduced cortical sensitivity, applications were made to the fronto-parietal areas of both sides, and the contact was prolonged up to 1 min. Control assays had previously shown that the observed pressor effects were not due to the presence of a high concentration of the base or the tartrate radical, nor to the acidity of the solution. The hypertensive effects initiated by topical application corresponded to those engendered by intravenous injections of 10 to 20 µg of adrenaline bitartrate. The

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adrenergic blocking agents were given at doses which totally reversed the usual cardiovascular actions of intravenously injected adrenaline or noradrenaline.

It has now been observed in experiments performed under these conditions with any of the selected drugs, that subsequent applications of adrenaline to the cerebral cortex were regularly followed by hypertensive reactions. Relatively high concentrations of these compounds sometimes attenuated this effect at the beginning. But later on, the cortical response was restored, and even surpassed its previous amplitude, while intravenous adrenaline and noradrenaline administration continued to cause hypotensive actions. Such an assay is illustrated in the Figure, showing that an animal having received a dose of Regitine, sufficient to transform the cardiovascular reactions to intravenous adrenaline, maintains an important hypertensive response to the same hormone on cortical application.

One could possibly object to this kind of experiments in that the important quantities of transmitter which may 'diffuse' from the cerebral cortex into the systemic circulation, might act differently from the very small amounts introduced intravenously. But in the same experiment shown in the Figure, the administration of three times the initially injected dose of i.v. adrenaline (II) only accentuated the previously obtained reversal, and a repetition of such an injection (IV) even led, in this case, to a lethal blood pressure fall.

One could then argue that the 'diffusing' substance, passing into the jugular vein and consequently entering directly the heart, might not react like the same transmitter injected through more peripheral channels, such as the saphenous or the femoral vein. However, such a possibility has been ruled out in experiments in which rabbits pretreated with Dibenamine, and reacting indifferently by hypotensive effects to injections of adrenaline performed through the saphena, the jugularis, or even the carotid artery, unvariably responded by pressor effects to cortical applications of the same substance.

Another possible objection might be concerned with the apparent discrepancy between the amounts of adrenaline and those of its antagonistic drugs, on the one hand, and between their respective modes of administration (cortical in the first, and intravenous in the second case). However these arguments cannot be considered as particularly pertinent, for intravenous as well as cortical adrenaline produced equipressor reactions in the experiments reported. They could finally be eliminated by assays in which the transmitter and the adrenergic blocking agent were both applied to the cerebral cortex at strictly corresponding concentrations. Here again a complete dissociation has been realized.

Uni- or bilateral contacts during 5 min of a piece of filter-paper soaked in a 5% solution of Regitine, Piperazine, Dibenamine or Largactyl, resulted in a considerable enhancement of the hypertensive response to a subsequent topical application of adrenaline, whereas the cardiovascular effects of intravenous injections of the same hormone were unchanged or decreased.

Adrenaline-sensitive elements can thus be characterized at cerebral levels thanks to the fact that their affinity to so-called 'adrenergic blocking' agents differs in a specific way from that of corresponding peripheral structures.

Résumé. L'administration parentérale d'agents «adrénolytiques» de structures diverses laisse persister la réaction hypertensive à l'application corticocérébrale de l'adrénaline tout en inversant les effets cardiovasculaires habituels de cette hormone injectée par la voie intraveineuse. L'application corticocérébrale de ces mêmes agents engendre un renforcement de la réponse hypertensive à l'adrénaline corticale.

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Thyroid Hormone Synthesis During Hypothermia in Rats

Hypothermic reduction of thyroid I^{131} uptake has been shown in rats[1,2] and has persisted even after returning to normal body temperature[3]. Paper radiochromatography of the alkali hydrolysate of the gland demonstrated an organic incorporation of the iodine taken up during hypothermia[1]. The aim of the present investigation was to study the formation of iodinated amino acids in hypothermia by means of paper radiochromatography of trypsin hydrolysed gland.

Material and Methods. Eighteen male albino rats of 150–170 g weight were used. Two groups of six rats were cooled by GJAJA's method of hypoxic hypercapnia[4], one group to 18–20°C and the other to 28–31°C rectal temperature. 20 μC of carrier-free I^{131} in 0.4 ml saline solution were injected intravenously during the corresponding degree of hypothermia, and then kept for 5 h at this rectal temperature. The rats were sacrificed and each thyroid gland removed and weighed on a microtorsion balance, homogenized and hydrolyzed for 48 h at 38°C in 1 ml veronal buffer pH 8.6 with 2 mg trypsin, and $7 \cdot 10^{-4}$ propylthiouracil was added to avoid further transformation of I^{131} *in vitro*. 30 μg of monoiodotyrosine, diiodotyrosine, triiodothyronine, thyroxine, and KJ were added as carriers. Paper chromatography of the hydrolysate was carried out in a system of butanol-acetic acid-water (4:1:5), developed during 20 h, and the detection of iodine was by ceri arsenic reagent[5]. Chromatograms were cut in a segment of 1 cm and radioactivity of each determined on a well type scintilating counter.

Results and Comments. The results (Table and Figure) show that deep and light hypothermia reduce thyroid I^{131} uptake and, at in the same time, a change in the various intraglandular forms of iodine compounds occurs. Monoiodotyrosine and diiodotyrosine are present in a higher proportion in relation to the total iodine. Iodinated thyronines (triiodothyronine and thyroxine) activities were at

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