

ventralis, pars medialis, and the saccus vasculosus did not cause any darkening of the injected frogs. The pars neuralis was not tested separately from the pars intermedia, to which it is attached as a thin membrane because at the time of these experiments the exact location of this tissue was not known.

A striking picture was obtained when the hypophysis was removed, under surgical conditions, from live dogfish. When returned to the sea water these fish rapidly became a silvery white, while the sun-bleached frogs injected with the extracts of the glands removed from them became black. (Bard, 1931, by the removal of the hypophysis, brought about a contraction of the melanophores of the skin of dogfish resulting in pallor. The removal of the pars intermedia, leaving intact the remainder of the gland including the pars distalis, resulted in a less complete bleaching of the operated fish.)

The results of these experiments seem to indicate that in the selachians two lobes of the hypophysis cerebri (pars distalis and pars intermedia) contain a melanophore expanding substance. These two lobes are quite different in structure and lie some distance apart. Interposed between them is the pars medialis, which does not contain a melanophore expanding hormone. In the hypophyses of higher forms, Dr. Geiling has found that where the pars intermedia is present the melanophore hormone is confined to that lobe; when the intermediate lobe is absent, however, as it is in fowls and whales, the melanophore hormone is located in the anterior lobe.

THE PRESSOR ANTIDIURETIC AND OXYTOCIC HORMONES OF THE HYPOPHYSIS CEREBRI OF CERTAIN SELACHIANS AND TELEOSTS

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Studies on the hypophysis cerebri of two types of cartilaginous fish (dogfish and skate) and one type of bony fish (sculpin) were undertaken in order to determine whether the pressor, oxytocic and antidiuretic hormones commonly present in the hypophyseal gland of vertebrate animals were present in the gland of these fish and, if so, in which lobe the active principle was located.

The acetone desiccated portions of the hypophysis cerebri of the dogfish and the skate were made into powders from which 0.25 per cent acetic acid extracts were made.

The results obtained with the extracts prepared from the different portions of the gland (posterior lobe, saccus vasculosus, ventral lobe, and anterior lobe) are indefinite. In some experiments there was evidence of pressor activity from all parts, and in other experiments the results were uniformly negative. It is thus difficult to draw any definite conclusion. One may say there is a suggestion of slight pressor activity in the posterior lobe and saccus vasculosus.

The experiments to determine the antidiuretic activity yielded similarly inconclusive results.

The experiments to measure the melanophore hormone gave evidence of marked activity from the posterior lobe but not from saccus vasculosus.

The impression one gains from the results obtained is that there are present very small quantities of so-called posterior lobe principles, but with the small amounts of material available (glands from 35-40 dogfish) one cannot get enough of the active principles extracted to yield definite results. In spite of the difficulty of collecting larger amounts of material, it would seem necessary to have larger quantities in order to arrive at a more definite conclusion regarding the distribution of the so-called posterior principles.

Extracts from the sculpin hypophysis (glands from 25-30 sculpins) on the other hand, showed definitely the presence of the pressor and antidiuretic principle of the posterior lobe. They had very little, if any, oxytocic activity. Comparison doses ten times greater by weight than doses of standard beef pituitary gave no results.

FURTHER STUDIES ON THE HYPOPHYSIS CEREBRI OF CERTAIN SELACHIANS BY MEANS OF TISSUE CULTURES

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This study is a continuation of the one begun in 1934 (Lewis and MacNeal) on the growth in vitro of the hypophysis cerebri of the dogfish and the skate. In these later experiments a more exact separation of the different lobes of the gland was attained in preparing the tissue for explanation, and a more satisfactory culture medium arrived at by the addition of sterile sodium chloride to chicken plasma in amounts necessary to render the salt concentration of the plasma equivalent to 1.8 per cent sodium chloride.

In these cultures it was found that growth of the epithelium from the pars distalis and the pars medialis took place, within 1 to 2 days. On the other hand, the epithelial growth from the pars intermedia was much slower, usually beginning 4 to 7 days after explanation. A few cells with long branched processes made their appearance from the pars neuralis in the course of a week. The growth of the saccus vasculosus was quite irregular; in many instances the cultures of this tissue failed to exhibit any growth even in autoplasm. The growths continued for many days, usually attaining a maximum within 10 to 14 days. The cells of the different tissues retained their specific granules in the cultures. Extracts prepared from growths of the pars distalis and the pars intermedia brought about a darkening of the sun-bleached frogs into which they were injected, indicating that the melanophore-expanding substance remained active in the cultures.