

**ON THE PHYSIOLOGICAL ACTION OF EXTRACTS
OF PITUITARY BODY AND CERTAIN OTHER
GLANDULAR ORGANS. BY G. OLIVER, M.D. AND
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(Preliminary Communication.)

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ACCOMPANYING our investigations into the physiological action of extracts of the suprarenal capsules published in preliminary form in the *Proceedings of the Physiological Society*, March, 1894, and in the *Proceedings* of the same Society, March, 1895¹, and which have just appeared at length in this Journal, we have pursued similar investigations into the effects of certain other gland-extracts and especially extracts of pituitary body, of thyroid and of spleen. The extracts we have employed have been prepared for the most part with water or glycerine, and either from the fresh glands or from glands dried rapidly at 38° C.

The most striking immediate result of intravenous injection of extracts of any of the above organs is upon the blood-pressure. By pituitary extract this is markedly raised; by thyroid extract it is lowered; and by spleen extract it is at first lowered and then somewhat raised. Of the extracts of the three organs in question that of pituitary body is by far the most marked. The rise of blood-pressure produced is rapid, its amount varying with the initial pressure. The fall is slow and the maximum pressure is maintained for many minutes if the dose has been sufficient. As with suprarenal extract the rise is due to a combination of two causes, viz. (1) contraction of arterioles and (2) augmentation of heart-beats. As with suprarenal extract it occurs in mammals equally well with the cord cut or the bulb destroyed. Doubtless therefore the action is a peripheral one and this is confirmed by the fact that when added to Ringer's circulating fluid

¹ This *Journal*, Vols. xvi. and xvii.

and perfused through the vascular system of the frog with nervous system destroyed the flow of fluid is greatly diminished. Also as with suprarenal, boiling for a short time does not affect its activity. The chief points which differentiate it from the action of suprarenal extract are the following:—

1. A much larger dose is required to produce the same amount of rise; indeed it is not possible to get even with very considerable doses so extreme a rise of pressure as is obtainable—with cut vagi—by a very small dose of suprarenal. Although its action is well marked pituitary extract is therefore, as compared with suprarenal extract, less active.

2. The pressure rises more slowly but is maintained for a longer time: the active substance is therefore less readily eliminated from the blood than that of the suprarenal.

3. The inhibitory action upon the heart which is characteristic of suprarenal extract when injected into a dog with intact vagi is not observed with pituitary extract.

4. The accelerating action upon the heart which is so characteristic of the action of suprarenal extract in an animal with vagi cut or atropinised is absent with pituitary extract under the same conditions; and indeed is generally replaced by a slight diminution in frequency: the beats of both auricle and ventricle may however be augmented in force, although this does not occur to so great an extent as with suprarenal extract.

The action of water or glycerine extracts of thyroid (boiled) is the reverse of that of pituitary or suprarenal extracts. The effect upon blood-pressure is to produce a fall when injected into a vein, and it has been shown by one of us (Dr Oliver) that in man the inception of thyroid extract tends to produce enlargement of the calibre of the radial artery whereas inception of suprarenal tends to produce the opposite effect. The action upon the circulatory system of the dog as shown by the tracings of blood-pressure indicate that the effect of thyroid extract is not only of a different character but also far less marked than that of pituitary and therefore of course very much less than that of suprarenal. It is also, as compared with either of these, of relatively short duration. Nor are we as yet prepared to assert that it is certainly specific, for a somewhat similar result is obtained by intravenous injection of decoctions of some other glandular organs—*e.g.* parotid and submaxillary glands of the dog. This is the case also with spleen-extract, but the result is somewhat different for extracts of this

give a curve of blood-pressure which is apparently characteristic of the organ, viz., a preliminary fall, followed by a gradual rise, and this again succeeded by a slow return to the normal. Our investigations into the effects of these and other gland extracts are still in progress, and we have merely stated the general results upon the blood-pressure here because of the marked contrast they offer to the effects of suprarenal and pituitary.

These observations would appear to indicate that the opinion which has been freely expressed that the pituitary and thyroid are vicarious in function, and which has been based upon the apparent enlargement of the pituitary after thyroidectomy, is probably incorrect, seeing that extracts of the two glands produce entirely contrary physiological effects.

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