

hormone content of the diaphragm may be optimal and since added hypophysis extract may not penetrate, these results are not in disagreement with Colowick's theory.

Next the effect of adrenaline injection was studied on the diaphragm glycolysis of hypophysectomized and of adrenalectomized animals (see table).

Adrenalectomized animals show a normal response to adrenaline injection, indicating that indirect stimulation of the adrenal cortex by adrenaline as described by M. Vogt³ plays no part in the effect. Hypophysectomy, however, abolishes the adrenaline effect. The part played by the hypophysis could be a release of a hexokinase-inhibiting hormone under the influence of injected adrenaline, but other mechanisms, in particular pituitary influence on the action of adrenaline itself, or an active derivative, remains possible. Investigations to elucidate these possibilities are in progress, and a detailed report will be published later.

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¹ Cori, C. F., and Cori, G. T., *J. Biol. Chem.*, **79**, 309 (1928).

² Colowick, S. P., Cori, G. T., and Slein, M. W., *J. Biol. Chem.*, **168**, 583 (1947).

³ Vogt, M., *J. Physiol.*, **103**, 317 (1944).

Influence of Adenohypophysectomy on the Transfer of Salt Across the Frog Skin

It is well known that the isolated skin of the frog is able to transport salt from its outside to the inside when bathed with frog Ringer on both sides¹. In view of the fact that cortical hormones play an important part in the reabsorption of sodium chloride in the kidney, an investigation was made to learn whether the skin of hypophysectomized frogs, in which cortical secretion presumably is considerably decreased, is still able actively to transport salt. In specimens of *Rana temporaria* the adenohypophysis was removed, and the animals, together with unoperated controls, were kept without food in water at 10°–15° C. Three operated animals, two males and one female, of healthy appearance, were used in the experiments. The operations were carried out in November. The secretion of the skin of the operated frogs was very markedly reduced. This effect of hypophysectomy on the toad has already been described by Aubrun².

In May—about six months after the operation—the skin was tested (1) for ability to transport salt, and (2) for permeability to salt. Pouches made from the skin of the thigh (cf. Huf) were filled with 1.5–2 ml. frog Ringer or water and placed in small vessels containing 10 ml. aerated frog Ringer. The pH was kept at about 7.4, the temperature at 22° C. The passage of salt through the skin was followed either by chloride titration (when Ringer was used inside the pouch), or by conductivity measurements on the content of the pouches (when starting with water inside the pouches) using a Philip's Philoscop, A.C. 1,000 cycles³.

Table 1 shows the result of the experiments when Ringer was applied on both sides of the skin. As was

TABLE 1

	Hypophysectomized	Normal
μ mol. Cl/hr./cm. ²	0.27, 0.37	0.24
	0.49	0.38
	0.56	0.54

TABLE 2

	Hypophysectomized	Normal
μ mol. Cl/hr./cm. ²	0.73	0.05
	0.74	0.10
	0.82	0.13

to be expected, the transfer of salt occurred from the physiological outside to the physiological inside of the skin. The results are expressed in μ mol. Cl per hour per cm.² of the skin. It is seen that with regard to the ability of transporting salt, no demonstrable difference exists between the skin of normal and of operated animals. Starting with water inside the skin pouch, the results given in Table 2 were obtained. The figures represent the rate at which salt was lost into the pouch. The skin of operated frogs is found to be several times more permeable than normal skin. It is therefore not surprising that the adenohypophysectomized frogs were unable to keep the chloride ion concentration of the blood at a normal level. Table 3 shows the chloride concentration in the lymph two and five months after the operation. The chloride determinations were performed on 3 mm.³ samples of lymph taken from the lymph-sac by means of a Carlsberg constriction pipette through a small incision in the skin.

TABLE 3

	Hypophysectomized		Normal	
	Months after operation		2	5
mmol./l. Cl of lymph	2	5	2	5
	58	47	69	84
	64	55	75	75
	—	48	70	81

It may be concluded that the salt transport of the skin of the frog may function even in the absence of the adenohypophysis. However, directly or indirectly, perhaps via cortical action, this gland is necessary for the maintenance of the very low salt permeability characteristic of the normal skin.

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¹ Huf, *Pflügers Arch.*, **236**, 1 (1935).

² Aubrun, *C.R. Soc. Biol.*, **120**, 734 (1935).

³ Barker Jørgensen, *Acta Physiol. Scand.* (in the press).

Critical Moisture Content of Dehydrated Stockfish

INVESTIGATIONS conducted in this Laboratory into the dehydration of stockfish (*Merluccius capensis*) have indicated that the moisture content of the dried product has a great influence on its keeping quality.

Whereas such products as dehydrated vegetables, dried fruit, dried whole milk and dried eggs have their storage life lengthened with reduction of the moisture content of the dried product, the reverse relationship has been found to hold for dehydrated stockfish.

Below 8 per cent moisture content, there is a sharp reduction in the storage life of dehydrated stockfish with every decrement in moisture content. The deterioration takes the form of both discoloration and loss of flavour. The re-incorporation of the liquid extracted from the flesh during the preliminary cooking of the flesh by steam also retards the rate of deterioration, but not sufficiently to give an effective storage life. With increasing moisture content above 8 per cent there is still evident a small improvement in quality of the dried product