blood potassium, while injections of other sugars caused no increase. With the selectively absorbed sugars, the peak of the potassium curve is reached only when the sugar concentration in the plasma has already begun markedly to decrease.

In adrenalectomized animals, however, there is no increase in plasma potassium after intravenous injection of the selectively absorbed sugars. These sugars now react in the same way as the non-selectively absorbed sugars. The conclusion must be

BLOOD SERUM
SUGAR POTASSIUM

DOTTED LINE, BLOOD SUGAR; FULL LINE, SERUM POTASSIUM. AT 0' 0.50 GM./KGM. SUGAR WAS INJECTED INTRAVENOUSLY.

that there is a close connexion between the rapid uptake by the cells of the selectively absorbed sugars and the increase in plasma potassium. It seems most probable that the process which connects these two phenomena is a phosphorylation process leading to the formation of glycogen or intermediary substances. The possibility of such a mechanism has recently been stated by Conway and Boyle². It would then follow that it is this process which is lacking after adrenalectomy, thus causing the disturbances both in carbohydrate and in potassium metabolism seen in adrenalectomized animals.

The figures are examples of experiments which will be published in *Helvetica medica Acta*.

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¹ Verzar, F., Sixteenth Int. Physiol. Congr. 1938, and "Funktion der Nebennierenrinde", B. Schwabe (Basel, 1939).

² Conway, E. J., and Boyle, P. J., NATURE, 144, 709 (1939).

Anserine in Muscle: Possibility of Determination by Titration

SOME time ago¹, I showed that the buffering power of the non-protein constituents of rigor muscle between pH 6 and 7 could be largely accounted for by the sum of the buffering powers of the phosphate, carnosine, and lactic acid present. In the muscles of some animals, notably the horse, ox, and pig, these constituents accounted for more than 90 per cent of the non-protein buffering; in others, notably the rabbit, dog and fowl, a considerable residue of buffering—up to 26 per cent of the non-protein buffering of the muscle—remained unaccounted for. I suggested that this buffering might be largely due to anserine, which has a buffering range almost identical with that of carnosine, but reliable analytical data for anserine were not then available.

Zapp and Wilson² have, in the meantime, published a method of determining anserine, and give values for the anserine content of the muscles of various species which are of such a magnitude as to account completely for this unidentified buffering. Some instances are included in the accompanying table.

Species	Anserine equivalent of unidentified buffering (mgm./100 gm.)	Anserine reported by Zapp and Wilson (mgm./100 gm.)
Horse ..	50	17-48
Ox ..	110-240	38-144
Rabbit ..	325-495	223-502
Rat ..	160-310	319
Dog ..	270	212

The coincidence in the magnitude of anserine contents is extremely close, and although individual muscles vary widely the conclusion is justified that the unidentified buffering does represent buffering due almost exclusively to anserine.

The determination of residual buffering (that is, after deducting that due to phosphate, carnosine and lactic acid) may, therefore, serve as a rough guide to the amount of anserine present in muscle; it will certainly serve as a true guide to the upper limit of this substance present, for the actual titration of the muscle extract is accurate, the determination of phosphate is accurate, and the determinations of lactic acid and carnosine are reasonably so. The whole determination can be carried out on the extract from 10 gm. of muscle in a few hours (as compared with the several days needed for Zapp and Wilson's method) and many samples could be examined together.

It is proposed, when the opportunity offers, to evaluate the possibilities of the method by carrying out parallel analysis by Zapp and Wilson's method and by the titration method.

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¹ J. Physiol., 92, 336 (1933).

² Zapp and Wilson, J. Biol. Chem., 126, 9, 19 (1938).