

is multiplied by the D : N ratio, which was obtained on the days previous to that on which the substance was fed. We obtain in this way the dextrose derived from the body. The dextrose derived from the administered substance can then be ascertained by deducting the dextrose derived from the body protein from the total dextrose excretion.

To serve as a check of the above method, especially in cases where the glycconeogenesis is slight in degree, another procedure can be adopted. This consists in feeding a diabetic animal for several days or weeks on carbohydrate-free food *plus* the substance under investigation, and then finding whether the total amount of dextrose excreted in this time, together with that present in the body at the end of the observation, exceeds that which could have been derived from the stores of carbohydrate originally present in the body. In using this method, we must make allowance for the *greatest* possible amount of carbohydrate that the body of the animal could contain under the conditions existing at the start of the experiment. Pflüger has insisted that this must be 4 grammes of dextrose per kilogramme of body weight, even in animals from which the pancreas has been for several days removed, or in those that have been for some time under phlorhizin.

Turning now to the outcome of the investigations, and first of all with regard to the evidence that glycconeogenesis does occur in the diabetic animal, we may take the following observations: a depancreated dog of 5 kilogrammes body weight excreted 1,176 grammes dextrose in twenty-five days, the food being free of carbohydrate. If we allow 4 grammes dextrose per kilogramme in the body to start with, 257 grammes might have come from this source, leaving 919 grammes which must have been newly formed (Lüthje, 4). In another observation of the same nature 2,499 grammes dextrose was formed in two months (Pflüger, 4A).

The possible sources of this dextrose are protein and fat. The evidence that it is derived—partly, at least—from protein is as follows:

1. The dextrose excretion in a diabetic animal rises and falls with the protein ingestion. Thus, a diabetic patient observed by Külz was fed for some time on carbohydrate-free diet, and then was given, on several successive days, measured quantities of casein along with meat extract and fat. The amount of dextrose excreted was found to run in the same direction