The following results were obtained from animal experiments: Dog 1 received 3.0 gm. taurine in 100 cc. of water by stomach tube. From the urine of the first and second days a total amount of 5.10 gm. Na-β-Naphthalenesulfotaurine, equivalent to 2.2 gm. taurine, were recovered. Recovery 73%. Dog 2 was given 4.0 gm. taurine in 100 cc. of water by stomach tube. From the urine 5.90 gm. Na-β-Naphthalenesulfotaurine, equivalent to 2.6 gm. taurine, were obtained. Recovery 65%.

These results confirm the previous work carried out in this laboratory, and show within the errors of experimentation that taurine when fed to dogs is excreted unchanged, and not in the form of taurocarbamic acid.

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Osmotic Pressure Measurements on Proteins in Urea Solutions.

NORVAL F. BURK AND DAVID M. GREENBERG.

From the Division of Biochemistry and Pharmacology, University of California, Berkeley.

In the development of the theory of solutions, it has often happened that the use of other solvents than water has led to results that are entirely obscured in aqueous solutions.[1] It seems desirable on this account to study the physical chemical properties of proteins in such other solvents as are capable of dissolving them in appreciable quantities. A few such pure and mixed solvents that might be employed are anhydrous formic acid, liquid phenol, alcohol-water mixtures and urea-water mixtures.

As a start on this general problem, measurements of the osmotic pressure of proteins in urea solutions were undertaken. The 2 immediate objectives were to determine if changes in the state of aggregation of proteins could be detected, and, to develop a method for the determination of the molecular weights of proteins that are not soluble in water in the absence of electrolytes. Up to the present, the only means of fairly accurately determining the molecular weights of proteins (colloids in general) that have been developed

are by osmotic pressure[2] determinations and by the ultracentrifuge[3] method of Svedberg. In both of these methods pure isoelectric solutions of proteins are required to obtain correct results. Only relatively few proteins are soluble in water in the isoelectric condition. Urea solutions have a very powerful solvent action on most proteins. If the protein is a pure, electrolyte free sample, the resulting solutions show only a very slight conductivity indicating that the dissolved protein is unionized. This makes it possible to make the osmotic pressure measurements with the elimination of the Donnan membrane equilibrium as an interfering factor.

TABLE I.
Osmotic Pressure of Casein in 40% urea solution.

Concentration of Casein (gm. per 100 cc.)	Casein gm. per 100 gm. solvent	Observed Osmotic Pressure. cm. of solution	Capillary Correction cm.	Osmotic Pressure. Height in cm. of H_2O
		Series 1.		
1.01	0.93	12.5	0.52	13.2
1.95	1.80	26.6	0.43	29.0
2.68	2.48	39.0	0.43	42.7
3.66	3.42	51.0	0.43	56.1
		Series 2.		
0.95	0.87	11.75	0.43	12.45
3.63	3.40	53.2	0.43	58.5

In Table I are given some measurements obtained with purified casein in 40% urea solutions to illustrate the experimental results. The urea concentration was 40 gm. in a 100 cc. of solution. The density of this 40% urea solution was 1.10. The measurements were made in a refrigerated chamber at 0.7° C. The results show that the osmotic pressures of the casein solutions are proportional to the concentration, within the limits measured. From the values obtained the molecular weight of casein was calculated, making use of the Morse and Frazier[4] equation and employing for the molal volume the mean molal volume of the urea solution. The average value obtained for the molecular weight of casein is 12,300. This figure agrees fairly well with the result calculated from the chemical analysis of casein.[5]

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