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Further Experiments on the Fate of Taurine in Dogs.

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Experiments which were carried out in this laboratory by Schmidt and his co-workers[1, 2] showed that when taurine is ingested by man there is no marked increase in urinary sulfates. The α-amino nitrogen determinations in the urine indicated that contrary to the claims of Salkowski, taurine is excreted free and not as taurocarbamic acid. Schmidt and Clark[3] were able to show that the fate of taurine in dogs is the same as in man.

The experiments described below were undertaken with the view of isolating taurine from the urine of dogs which had been fed this substance. For the isolation of taurine we used a modification of the method described by Bergell.[4] The Bergell technique in our hands did not yield positive results. The procedure was as follows: One gm. taurine was dissolved in 100 cc. of urine. To this solution were added 2.5 gm. β-Naphthalene-sulfochloride, in 15 cc. ether, and 9 cc. N-NaOH. After shaking for 2 hours, 1 gm. of the chloride in 10 cc. ether, and 10 cc. N-NaOH were added. The shaking was continued for 8 more hours, care being taken that the reaction remained alkaline throughout the experiment. After completion of the reaction, the aqueous layer was separated and acidified with dilute HCl. A fine sediment separated out. The mixture was placed in the ice-chest over night. The next morning, it was centrifuged and just enough sodium chloride added, until the Na-salt of β-Naphthalene- sulfotaurine began to form. After standing in the ice-chest for 24 hours, the precipitate was filtered, dried and weighed. The substance was purified by recrystallization from 85% alcohol. By this method we were able to recover 0.8 gm. from 1.0 gm. taurine added to 100 cc. of urine.

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.

[1] Schmidt, C. L. A., von Adelung, E., and Watson, T., *J. Biol. Chem.*, 1918, xxxiii, 501.

[2] Schmidt, C. L. A., and Allen, E. G., *J. Biol. Chem.*, 1920, xlii, 55.

[3] Schmidt, C. L. A., and Clark, G. W., *J. Biol. Chem.*, 1922, liii, 193.

[4] Bergell, P., *Z. physiol. chem.*, 1916, xcvii, 260.

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Osmotic Pressure Measurements on Proteins in Urea Solutions.

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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