

The precipitate obtained from the urine of mice by metaphosphoric or acetic acid is insoluble in cold water, in 70% alcohol and in dilute acids, but it is readily dissolved in weak and strong alkali as well as in strong mineral acids. The precipitate dissolved in weak alkali could easily be reprecipitated by addition of weak acids. The fact that such a precipitate could be obtained from urine of mice by means of metaphosphoric acid, acetic acid, or sulphosalicylic acid, and furthermore the positive Heller's ring test with urine, as modified by Roberts, indicates the presence of protein in the urine of mice.

The biuret test with the precipitate is likewise positive.

The *total nitrogen* content of urine of mice amounts to 25-30 mg. of N per 1 cc. of urine. We then made a separate analysis of nitrogen content of the precipitate and of the supernatant portion of the urine in which precipitate had been produced with acetic acid (Bang's reagent). From the data obtained it was possible to calculate the amount of coagulable and noncoagulable nitrogen in the total urine.

	Amount of nitrogen in mg. in 1 cc. of urine.	
	Coagulable N (corresponding to N of precipitate)	Noncoagulable N.
Normal mice	5.6-10	20-24
Cancer mice	2 - 3	19-25

These results indicate that after transplantation of sarcoma 180 there takes place in the urine of tumor mice (1) a diminution in the concentration of calcium; (2) a diminution in the amount of coagulable nitrogen.

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Ineffectiveness of Calcium, Potassium, and Magnesium Salts Against Symptoms of Anaphylactic Shock.

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It is well known that changes in the balance of calcium and potassium ions may produce definite effects upon the neurocellular responses of animals and man. Warnant,¹ and Thornton and Gillespie² have shown that such alterations in the concentration of

¹ Warnant, H., *Arch. Internat. de Pharm. et de Therap.*, 1930, **27**, 61.

² Thornton and Gillespie, cited by Bray, G. W., *Recent Advances in Allergy*. Blakeston's. 1931. p. 27.

these ions may influence the bronchiolar reactions of the isolated perfused lungs of animals; addition of calcium to or a reduction of potassium in the perfusion fluid resulting in bronchoconstriction. With magnesium alone Warnant obtained bronchodilation. In intact animals, Anderson and Rosenau³ showed that magnesium did not in any way affect the fatal outcome of anaphylactic shock.

The experiments here recorded were undertaken to obtain further knowledge concerning the value of calcium, potassium, and magnesium salts as protective agents against the symptoms of anaphylactic shock. Thirty-three sensitized guinea pigs were used: 15 animals were injected with calcium lactate (0.7 to 1.5 gm. per kilo), 9 with potassium chloride (20 to 30 mg. per kilo.) and 9 with magnesium sulphate (0.7 to 1.0 gm. per kilo). The salts were administered intramuscularly and the dosage so chosen that a maximum effect would result without masking the symptoms of shock. The interval of time between the injection of the salt and the critical dose of horse serum varied from 20 to 40 minutes. That the doses selected were large was shown by the death of a number of unsensitized control animals within 24 to 48 hours after the salts were given. Magnesium sulphate usually produced marked muscular relaxation and some anesthetic effect; calcium and potassium however, gave rise to no immediately discernible clinical symptoms.

The technic used for sensitization and production of shock was the same as that recorded in previous studies: the animals were sensitized by the intraperitoneal injection of 1 cc. horse serum, and shocked after an incubation period of 2 to 3 weeks by the intracardiac injection of 0.5 cc. serum. Control observations of this procedure carried out in connection with other experiments⁴ showed a mortality of about 85%. Compared with this control mortality, the animals given preliminary injections of the calcium, potassium, and magnesium salts showed about the same mortality rate. Of the guinea pigs given calcium lactate 80% died; in the potassium chloride series 88% succumbed; and all animals given magnesium sulphate died in anaphylactic shock.

It would appear, therefore, that changes in the cellular concentrations of calcium, potassium, and magnesium ions produce no effect on the fatal outcome of anaphylactic shock. Injections of magnesium sulphate, moreover, resulted in a higher mortality (100%) despite its central depressant action. In this respect it

³ Anderson, J. F., and Rosenau, M. J., *J. Med. Res.*, 1909, **21**, N. S. 16, 1.

⁴ Hurwitz, S. H., and Wessels, A. L., *PROC. SOC. EXP. BIOL. AND MED.*, 1932, **29**, 1016.

differs markedly from phenobarbital, whose central depressant action we have found¹ to reduce the mortality from anaphylactic shock by over 50%.

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Intranuclear Inclusions in Pertussis.

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For many years pathologists have been interested in a peculiar type of pneumonia that frequently complicates certain epidemic diseases, termed interstitial bronchopneumonia because of the cellular infiltration in the walls of the bronchioles and alveoli, and commonly seen in epidemic influenza, measles and pertussis. Dr. Muckenfuss and I¹ have been impressed by the similarity of the pneumonia produced by vaccine virus in the rabbit's lung to human interstitial pneumonia. We, therefore, suspected that a virus might be concerned with human interstitial pneumonia in measles, influenza and whooping cough. Measles is a virus disease, and many investigators now believe that the primary etiological agent of epidemic influenza may also be a virus. On the other hand, the Bordet-Gengou bacillus is almost universally regarded as the etiological agent of pertussis; although a critical study of the relation of this bacterium to the disease reveals many discrepancies. (Löwenthal and St. Zurukzogl².) Furthermore, a vaccine prepared from the bacillus is of doubtful value both as a prophylactic and as a curative agent. Pertussis sometimes is complicated by encephalitis, as are the known virus diseases such as measles and vaccinia. Finally, the interstitial character of the pneumonia associated with pertussis is similar to that seen in other virus diseases and therefore suggests the possibility of a virus in pertussis also.

Since inclusion bodies are associated with many virus diseases, we examined the sections from 35 cases of pertussis and found intranuclear inclusions in the lungs of 12. These were found in the cells lining the alveoli as well as in the bronchial epithelium. The cells containing the inclusions were always larger than their neigh-

¹ Muckenfuss, R. S., McCordock, H. A., and Harter, J. S., *Am. J. Path.*, 1932, **8**, 63.

² Löwenthal, W., and St. Zurukzogl², *Kolle u. Wassermann*, 1928, **5**, 1271.