ions on orientation of the water molecule by hydration with their influence on the amount of coagulation during freezing. As predicted, coagulation varies with salt concentration and goes through a minimum at low concentrations. Under favorable conditions coagulation can be entirely inhibited. These effects would appear to have various biological applications.

References

1. DJATSCHKOWSKY, S. J. *Kolloid Z.*, 1932, **59**, 76.
2. DORSEY, N. E. *Properties of ordinary water-substance.* New York: Reinhold, 1940. P. 397.
3. *Ibid.*, p. 503.
4. HAZEL, F. *J. Phys. colloid Chem.*, 1947, **51**, 415.
5. WALKER, H. W. *J. Phys. colloid Chem.*, 1947, **51**, 451.

Antithiamine Effect of Oxythiamine and Neopyrithiamine. A Comparative Study[1]

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According to Wilson and Harris (*3*), pyrithiamine does not have the structure assigned to it. These workers have synthesized a new compound which they call "neopyrithiamine," and which shows chemical and physical properties that would be expected from the pyridine analogue of thiamine. When this compound became available,[2] an experiment was set up with a view of comparing its antithiamine effect with that of oxythiamine, which was shown in this laboratory to act as an antagonist for thiamine (*2*).

Mice of the Swiss and C-57 Black strains from our stock colony were used. The animals were placed at weaning on a thiamine-deficient diet which consisted of casein (Labco) 25%, sucrose 53%, hydrogenated vegetable oil 10%, lard 5%, Osborne and Mendel salt mixture[3] 5%, and Ruffex 2%, and contained the following supplements per kg of diet: riboflavin 10 mg, pyridoxin 10 mg, calcium pantothenate 100 mg, α-tocopherol 40 mg, β-carotene[4] 20 mg, vitamin D (Drisdol) 5000 units, and choline chloride 1.5 g. When the animals had become steady in weight, they were maintained on 1 μg of thiamine per day, injected in aqueous solution subcutaneously for one week. Daily injections of oxythiamine or neopyrithiamine were then started together with 1 μg of thiamine in a ratio (thiamine: antivitamin) of 1: 50. Control animals, three for each group, received thiamine alone. The results are shown in Table 1.

In the case of both compounds the effect on the food intake was apparent overnight. There was a drop in the food intake of the animals and a loss in weight. The data show that the antivitamin effect of neopyrithiamine is more pronounced than that of oxythiamine.

TABLE 1

COMPARATIVE ANTITHIAMINE EFFECT OF OXYTHIAMINE AND NEOPYRITHIAMINE

Substance tested	No. of mice	Wt of mice at start of injections of antivitamin g	Incidence of polyneuritis %	No. of days before polyneuritis developed	Survival time in days
Oxythiamine	9	10.6–13.6	0	...	13–21
Neopyrithiamine	9	10.2–13.8	100	5–7	7–8

This manifested itself in the development of polyneuritic symptoms in the animals treated with neopyrithiamine and in a shorter survival period. The polyneuritic syndrome was similar to that described by Morris (*1*). In addition, we observed that the mice were apt to hold their heads on one side, and that they developed complete paralysis of the hind legs. The controls maintained their weight, and they survived until they were sacrificed two weeks after the last animal in the corresponding experimental group had died.

References

1. MORRIS, H. P. *Vitamins and Hormones*, 1947, **5**, 175.
2. SOODAK, M. and CERECEDO, L. R. *J. Amer. chem. Soc.*, 1944, **66**, 1988; *Fed. Proc.*, 1947, **6**, 293.
3. WILSON, A. N. and HARRIS, S. A. Amer. Chem. Soc. Abstr., Washington meeting, Sept. 1948.

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[2] We are indebted to Dr. K. Folkers of Merck & Co., Inc. for the neopyrithiamine.

[3] The quantity of manganese was doubled.

[4] A mixture of 90% beta and 10% alpha carotene (GBI) was used.

Mechanical Transmission of a Plant Tumor Virus to an Insect Vector[1]

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Most plant viruses transmitted by leafhoppers have not been demonstrated to be infective in extracts. The virus dealt with in this paper causes tumors in certain susceptible plants, is carried by leafhoppers, and like others in that group has proven difficult to detect in extracts. It is our purpose to recount briefly the variety of methods that failed to transmit the virus and to report on the success of insect-to-insect transmission by injection.

The virus, known as wound-tumor virus, *Aureogenus magnivena* Black (*2*), is transmitted from plant to plant by the leafhoppers *Agalliopsis novella* (Say), *Agallia constricta* Van Duzee, and *Agallia quadripunctata* (Provancher). Attempts by the authors to transmit the virus

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