7427 C

Methylene Blue in Illuminating Gas Poisoning.

LILLIAN MACK AND E. A. SMITH.*

From the Physiology Laboratory, Iowa State College.

Current reports[1] regarding the action of methylene blue in illuminating gas poisoning are sufficiently contradictory to warrant further experimental investigation of its value. Determination of prophylactic action is one method of approach.

In the experiments reported below the protective action of methylene blue in asphyxiation by illuminating gas was measured by determining the comparative lethal interval in 3 series of methylene blue injected as compared to non-injected white rats. In all cases reported, litter mates of similar weight and sex were compared; the injections were made intraperitoneally, about ½ hour previous to asphyxiation. When 50 mg. M. B. per kg. of body weight were injected it could be seen within 15 minutes in the capillaries of non-hairy regions of the body and in the conjunctiva. Usually 5 mg. (1 cc. aq. soln.) per kg. were used but varying amounts, between 5 and 50 mg. were tried, no advantages being observed with the larger amounts. Control animals received a similar amount of Ringer's solution.

In series 1, injected and non-injected normal litter mates were compared. In series 2, normal rats were compared to litter mates in which the basal metabolic rate had been increased by feeding ½ gr. U.S.P. desiccated thyroid daily for 15 consecutive days preceding asphyxiation. In series 3, normal rats were compared to litter mates in which the B.M.R. had been increased by injection of 1 cc. of 0.1% alpha dinitrophenol [(1-2-4) ($C_6H_3(NO_2)OH$)] intraperitoneally ½ hr. previous to asphyxiation or by giving the same amount by stomach tube on 3 successive days previous to asphyxiation.

The gas used was introduced directly from the city main into a closed circuit respiration apparatus equipped with a blower, soda lime container, and glass animal chamber. A 1.89% gas-air mixture (0.36% CO) was used. Cessation of respiratory movements served as the criterion of death in all cases.

* Aided by a grant from the Committee on Scientific Research of the American Medical Association.

[1] Bussabarger, Robert A., PROC. SOC. EXP. BIOL. AND MED., 1934, **31**, 598.

RESULTS.

Series 1. Normal Animals. (Age about 60 days.)

No. of animals		Mean lethal interval, min.			
Control	M. B. injected*	Control	M. B. injected	Mean diff.	Standard deviation of mean diff.
9	10	23.2	26.5	3.3	2.5
Series 2. Increased Basal Metabolic Rate—Thyroid Fed.					
Control	Thyroid fed	Control	Thyroid fed		
10	9	30.5	15.5	15	5.4
Thyroid fed	Thyroid fed and injected with M. B.	Thyroid fed	Thyroid fed and injected with M. B.		
9	11	15.5	9.7	5.8	3.6
Series 3. Increased Basal Metabolic Rate—Dinitrophenol Injected. (Age about 200 days.)					
Control	M. B. inj.	Control	M. B. inj.		
11	8	42.1	39.2	2.9	6.2
Control	M. B. and D. N. T. injected	Control	M. B. and D. N. T. injected		
11	15	42.1	26.5	15.6	5.8
Control	D. N. T. injected†	Control	D. N. T. injected		
11	17	42.1	23.9	18.2	5.8
D. N. T. inj.	D. N. T. and M. B. inj.	D. N. T. inj.	D. N. T. and M. B. inj.		
17	15	23.9	26.5	2.6	4.1

* Methylene Blue injected.
† Dinitrophenol "

Summary and Conclusions. The data reported include the figures obtained in study of 100 animals. Many more were sacrificed in trial procedures. The results show no significant action by methylene blue as a prophylactic agent in illuminating gas poisoning. The very greatly decreased lethal interval in animals receiving desiccated thyroid or dinitrophenol is worthy of note.

7428 C

Measurement of Daily Heat Production of Albino Rat from the Insensible Water Loss.

JAMES A. GREENE.

From the Department of Internal Medicine, State University of Iowa Medical School.

A method is needed for measuring the daily energy requirements of the albino rat. The 24-hour insensible loss of weight and the percentage of the total heat loss that was due to vaporization of water have been measured to ascertain whether or not the measurement of the imperceptible water loss would fulfill this need.