THE CITY OF NEW YORK
DEPARTMENT OF HEALTH
MORRISANIA HEALTH DISTRICT

DISTRICT HEALTH CENTER
1309 FULTON AVENUE
BRONX 56, N. Y.

TEL. WY 2-4200

April 3, 1964

Robert A. Kehoe, M. D.
The Kettering Laboratory
College of Medicine
University of Cinncinnati
Edan Avenue
Cinncinnati 19, Ohio

Dear Dr. Kehoe:

I am in receipt of your letter of March 23rd, and I was pleased to have your suggestions. I have developed a lead method in which the blood proteins are first precipitated by trichloroacetic acid and then the supernatant solution is analysed for lead by the dithizone technique. I get 100% recovery of lead added to blood. The method is similar to the one which was developed by Dr. Eleanor Berman, Amer. J. of Clin. Path., Vol. 36 #6, 549-554, '61. My method has one major advantage over hers in that I am able to work with one dithizone solution whereas she has to work with several.

Both my method and that of Dr. Berman's cannot be used if the patient is under versenate therapy. We both have found that there is little lead recovery in the presence of versenate.

At the present time the method of analysis in use at the New York City Department of Health involves ashing of the blood samples and the presence of versenate does not interfere. However, we are in need of a method which can be performed more rapidly so that many more samples could be handled.

My concern in comparing the method which is presently being used in our lab with my new method is not for determining the differences in sensitivity, but rather to see if the lead levels would be the same. We already know that the levels are the same when we add lead to the blood, but the results may be different if we compare the methods when lead intoxicated blood of an animal is used.

It may be that the methods will give different results depending upon the type of lead intoxication. For example, in lead tetra-ethyl poisoning the analytical results may be different whereas with inorganic intoxication the results may turn out to be the same.

It may all be a matter of how thelead is combined with the blood. The type of blood lead combination never presents a problem when the the sample is ashed, but it may give trouble in my new method since there is no ashing. The new method will not be used until we have the answer to these questions.

I will probably try to produce lead intoxication in a dog by feeding lead nitrate or acetate, and then in a subsequent experiment I will feed a drug in which the lead is in organic combination, and then proceed to make comparisons of the analytical methods.

Thank you very much for your suggestions; I would be very pleased to hear from you again if you have any comments on my plans for further experimentation.

Yours very truly,

Bernard Searle

Bernard Searle, Ph.D.
Toxicologist

BS:dag

March 23, 1964

Doctor Bernard Searle, Ph.D.
City of New York Department of Health
District Health Center
1309 Fulton Avenue
Bronx 56, New York (10056)

Dear Doctor Searle:

I am not quite sure of your purpose in undertaking to obtain the blood of a dog poisoned by lead for the purposes of checking certain analytical methods, and therefore I must find out how to reply to your letter of March 13.

If it is merely your purpose to check two different analytical methods, I do not understand why blood from a "poisoned" dog is necessary. It would seem that the application of the two methods in the analysis of the blood of almost any dog would suffice, and would, in fact, put the methods to more severe test at the low level of the "normal" concentration of lead, than at the elevated concentration.

On the other hand, if you want the blood from a poisoned dog, rather than that from one with an elevated concentration of lead in its blood, it is quite another matter. The dog does not, as a rule, develop a type of intoxication that resembles human lead intoxication, but does, of course, respond to increased intake of lead with an increase in absorption and an increase in the concentration in the blood. The question I raise, therefore, relates to the range of concentration you wish to work with.

If you wish to examine a series of concentrations, your dog (or dogs) could be given lead by mouth, or could be fed on a diet containing lead, and blood could then be taken from time to time as the concentration in the blood increases. I do not have in mind, offhand, just what dosages in the dog would produce a prompt and predictable elevation of the concentration within the limits of assured survival, and before I look into this, it would be wise to know more of your intentions. I may say that in cross-checking the results of various laboratories, from time to time, we have prepared several series of samples of human blood (obtained from a blood bank) containing graduated concentrations of lead. This is not as simple a procedure as it might appear to be, but we have had reasonably satisfactory results. It is partly for this reason, that I wonder whether you are taking the long way around.

You may realize from these remarks and from our publications, that we have not expended much effort on experimental work with dogs, in relation to lead absorption and intoxication. Our observations have been made most

extensively on man, for certain experimental as well as practical reasons. There are some reliable data in the literature, I believe, which will lend themselves to satisfactory interpretation and extrapolation. We have fairly ready access to these, and therefore if you will let me in on your intentions, I shall do my best to help you.

Cordially yours,

RAK:vr

Robert A. Kehoe, M.D.

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