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REPORT ON THE EXAMINATION OF SAMPLES OF VETERINARY TUBERCULIN.

By R. A. O'BRIEN, C.B.E., M.D.

(From The Wellcome Physiological Research Laboratories)

THIS investigation upon the standardization and potency of the different samples of veterinary tuberculin was undertaken at the request of the Tuberculin Committee. The samples were purchased privately by the Tuberculin Committee and included specimens of well-known veterinary tuberculins made in this country and in the United States of America. One of the samples was from a Continental source.

Methods.

Bottles containing the various tuberculins marked with a letter only were received by Dr. Eagleton. These 19 bottles represented 13 samples of tuberculin, there being two bottles from each of 6 samples and one from each of the remaining 7. The former Dr. Eagleton handed to Dr. Okell and Dr. Parish for examination by the intradermic test. The estimations by the intradermic method were carried out separately by these two workers, each on two batches of tuberculous guinea-pigs. When these results had been obtained, Dr. Eagleton carried out the subcutaneous test. It was hoped in this way to be able to determine the degree of agreement between the two methods in the hands of three separate workers who did not know what samples they were examining; in other words, to 'test the test'. The remaining samples were examined by intradermic and subcutaneous methods by Dr. Eagleton.

The methods throughout were those described in the paper published by Eagleton and Baxter,¹ and the Standard Tuberculin used was that described in the paper; it is based upon the official Frankfort standard.

Results.

In Table I are given the results obtained by the three workers. The agreement between the three sets of results is satisfactory. For convenience the various pairs of samples have been brought

¹ *Brit. J. Exper. Path.*, 1923, 4, 289.

together, a letter being used to indicate the laboratory issuing the tuberculin, the numbers 1 and 2 indicating the two bottles of each sample. The Standard Veterinary Tuberculin is a ten-fold dilution of Standard Old Tuberculin.

TABLE I.

<i>Veterinary Tuberculin Samples.</i>	<i>Potency by intradermic test. Standard = 1. (Dr. C. C. Okell.)</i>	<i>Potency by intradermic test. Standard = 1. (Dr. Parish.)</i>	<i>Potency by intradermic and subcutaneous test. Standard = 1. (Dr. Eagleton.)</i>	
			<i>Intradermic.</i>	<i>Subcutaneous.</i>
A ₁	2	2	—	2
A ₂	2	nearly 2	—	2
B	—	—	Greater than 1	1-2
C ₁	1 (or slightly less)	1 (or slightly less)	—	1
C ₂	1 (or slightly less)	1 (or slightly less)	—	1
D ₁	1	1	—	1
D ₂	1	1 (perhaps slightly stronger)	—	1
E ₁	1 (or slightly more)	1	—	1
E ₂	1 (or slightly more)	1	—	1
F ₁	1	1	—	1
F ₂	1	1	—	1
G	—	—	1	1
H	—	—	1	1
K	—	—	1	1
L ₁	0.5	0.5	—	0.5
L ₂	0.5	0.5	—	0.5
M	—	—	about 0.3	0.3 to 0.5
N	—	—	0.2	about 0.2
P	—	—	about 0.2	0.2

After the general results had been arrived at by Dr. Eagleton on a review of the three tests, Table II was compiled.

TABLE II.

<i>Samples of Veterinary Tuberculins.</i>	<i>Potency Figure.</i>	<i>Average dose (in c.c.).</i>	<i>Old Tuberculin (in c.c.).</i>	<i>Comparative figure for amount of Old Tuberculin in dose used.</i>
A	200	4	0.8	200
B	120	—	—	—
C	100	4	0.4	100
D	100	4	0.4	100
E	100	4	0.4	100
F	100	—	—	—
G	100	—	—	—
H	100	—	—	—
K	100	—	—	—
L	50	4	0.2	50
M	30 to 50	4	0.2	50
N	20	4	0.08	20
P	20 or less	1.5	about 0.08	8

For convenience the letters have been transposed to run alphabetically in this list. In Column 2 a potency figure is shown. In attaching a definite figure there is some danger of

giving a false idea of the accuracy of the method (*v. Eagleton and Baxter, loc. cit., p. 295*), which is not comparable with that attained in the titration of diphtheria toxin and antitoxin. We are at present of opinion that a tuberculin whose real value can be represented as 100 might be returned, as the result of a single test, as of any value between 60 to 140, i.e. 40 per cent. above or below its proper value, but that in a laboratory where constant controls are in use, in a series of tests on a tuberculin whose real value is 100, the mean values obtained from the tests would closely approach 100, and the extreme values obtained might be 75 to 125, i.e. 25 per cent. above or below the proper value. In Column 2, tuberculins which were equal to a tenfold dilution of Standard Tuberculin are given a potency figure or 'percentage' of 100 and the figure for the others calculated on this basis. Column 3 shows the average dose indicated for a full-grown animal in the literature accompanying the samples. Column 4 shows the amount of Standard Old Tuberculin contained in the dose indicated. For convenience this figure has been translated in Column 5 into a 'percentage', 100 being assigned to those tuberculins which were equal to a tenfold dilution of Standard Old Tuberculin and which were to be given in the average dose of 4 c.c. generally used by veterinary practitioners.

Comments.

The only comment which it seems permissible to make on these results is that, whatever deviation from the standard may be allowable, the laboratories issuing A, L, M, N, and P, if they were aware of these results, would probably wish to conform to the common standard. This remark particularly applies to A, N, and P, since with A, which is apparently made by diluting Old Tuberculin five times instead of ten as practised by most makers, 'doping' or 'plugging' of cattle presumably becomes much easier to carry out; on the other hand, the veterinary surgeon using P or N may easily fail to detect tuberculosis in an animal.

The samples submitted did not permit an investigation into the constancy of strength of successive batches of tuberculin issued from the various laboratories. We have reason to believe that the degree of constancy is fairly satisfactory in most cases, but we have evidence that this is not so in all.

