A One-dimensional Diffusion Method of Assaying Streptomycin.

By

Nakao Ishida, Ken Katagiri, Reiko Chida and Toyo Hataya.

(石田 名香雄) (片桐 謙) (千田 禮子) (畑谷 とよ)

(From the Department of Bacteriology, Faculty of Medicine,
Tohoku University. Director: Prof. M. Kuroya.)

(Received for publication, May 13, 1949)

We developed a suitable method for assaying streptomycin as follows and are now using the method for the preparation of streptomycin and other similar antibiotics and for the estimation of streptomycin in body fluids.

0.5 cc. of streptomycin solutions of various concs. (2.5/8, 2.5/4, 2.5/2, 2.5, 5, 10 and 20 units in a buffered diluent, pH 8.0) were superimposed on 2.5 cc. of inoculated agar medium (dehydrated nutrient broth 0.5 g, Sod. nitrate 0.02 g, Agar 0.7 g, Water 100 cc., added with 0.5 cc. of 24 hours broth culture of *St. aureus* in a melted state at 45°C and divided into small test tubes). After 12 hours incubation at 30°C the lengths of inhibited zones were measured and plotted on graph paper, with the numbers of concs. of streptomycin in logarithmic scale on abscissa. The following formula was determined experimentally:

$y(x) = G(1 - e^{-r(x-a)})$, where $y(x)$ is the length of inhibition zone at log dose x and G , r and a are their parameters. But between 2.5/4 to 10 units the inhibition curve was nearly a straight line. So for the estimation, the formula $y = ax + b$ was used, where a and b were two parameters.