

of the Brucella group from 35 patients with Hodgkin's disease and from 36 patients with miscellaneous diseases of the reticulo-endothelial system. Three strains of gram negative cocco-bacilli not belonging to the genus Brucella have been isolated.

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In Vitro Inhibition of Mycobacteria by Streptothricin.

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Aside from penicillin, streptothricin is the only antibiotic whose pharmacologic properties indicate a suitability for general use in the animal organism.^{1,2} Interest in the development of an antituberculosis agent of microbiological origin led to *in vitro* tests of the efficacy of the only 2 antibiotics known which at present could possibly be of general use in animals or humans, namely, penicillin and streptothricin.

Various species of mycobacteria were totally resistant to the action of penicillin, even as

TABLE I.
Inhibition of Mycobacteria by Streptothricin.

Exp. 1. Long's medium. 6 weeks' incubation		Units per ml							
		0	.3	1	3				
<i>M. tuberculosis</i> (avian)		+	+	±	—				
Exp. 2. Nutrient agar—pH 7.0. 4 days' incubation		Units per ml							
		0	0.1	1.0	10.0	100			
<i>M. tuberculosis</i> (hominis 607)		+	+	±	—	—			
<i>M. lepræ</i> P.		+	+	—	—	—			
<i>M. smegmatis</i> I.M.		+	+	±	—	—			
<i>M. smegmatis</i> Tol.		+	+	±	—	—			
Exp. 3. Long's medium—pH 8.0. 4 days' incubation		Units per ml							
		0	0.1	0.2	0.3	0.4	0.6	1.4	
<i>M. tuberculosis</i> (hominis 607)		++	+	±	—	—	—	—	
<i>M. lepræ</i> P.		++	++	—	—	—	—	—	
<i>M. smegmatis</i> I.M.		++	±	—	—	—	—	—	
<i>M. smegmatis</i> Tol.		++	+	±	±	—	—	—	
8 days' incubation		Units per ml							
		0	0.1	0.2	0.3	0.4	0.6	1.0	1.4
<i>M. tuberculosis</i> (hominis 607)		++	++	++	++	++	+	—	—
<i>M. lepræ</i> P.		++	++	++	++	++	±	—	—
<i>M. smegmatis</i> I.M.		++	++	++	++	++	++	±	—
<i>M. smegmatis</i> Tol.		++	++	++	++	+	—	—	—
No change at 14 days.									
+ = growth.									
± = poor growth.									
— = no growth.									

¹ Metzger, H. J., Waksman, S. A., and Pugh, L. H., *Proc. Soc. Exp. Biol. and Med.*, 1942, **51**, 251.
² Robinson, H. J., Graessle, O. E., and Smith, D. G., *Science*, 1944, **99**, 540.

TABLE II.
Bactericidal Action of Streptothricin on Mycobacteria.

	Units per ml						
	0	1.0	1.5	2.0	3.0	4.0	5.0
<i>M. tuberculosis</i> (var. hominis 607)	+	+	+	+	—	—	—
<i>M. lepræ</i> P.	+	+	+	+	+	±	±
<i>M. smegmatis</i> I.M.	+	+	+	+	+	—	—
<i>M. smegmatis</i> Tol.	+	+	+	+	+	—	—

— = growth upon subculture on Long's agar.

± = poor growth upon subculture on Long's agar.

— = no growth upon subculture on Long's agar.

much as 1,000 Oxford units per ml. Further studies revealed that this resistance probably is due to the abundant formation of a penicillin-destroying enzyme, presumably penicillinase. Details of this are reported elsewhere.³

A study of the inhibitory action of streptothricin for 5 *Mycobacterium* cultures is included in Table I. Since streptothricin is stable, a single addition of the antibiotic was sufficient to maintain the desired unitage over the period of 6 to 8 weeks necessary for growth of some strains of mycobacteria. Streptothricin was particularly effective in Long's medium; this is probably the result of the alkalinity of the medium which is known to enhance the *in vitro* activity of streptothricin.⁴ The inhibitory range of 0.1 to 1.0 unit of streptothricin per ml places

these *Mycobacterium* cultures among the most sensitive organisms to streptothricin. *M. phlei* previously was found sensitive.⁵

A rough indication was obtained for the bactericidal action of streptothricin upon mycobacteria. Long's medium containing various quantities of streptothricin was inoculated heavily with 4 *Mycobacterium* strains. After 14 days' inhibition, portions of each culture were streaked on Long's agar to determine viability of the cells in the inoculum. Table II indicates that streptothricin was definitely bactericidal in low concentrations.

These experiments, placing the mycobacteria among the streptothricin-sensitive organisms, as well as the known therapeutic effectiveness of streptothricin against certain infections in guinea pigs and mice,^{1,2} suggest the desirability for detailed *in vivo* tests of streptothricin as a possible agent in the therapy of tuberculosis.

³ Woodruff, H. B., and Foster, J. W., *J. Bact.*, in press.

⁴ Foster, J. W., and Woodruff, H. B., *Arch. Biochem.*, 1943, **3**, 241.

⁵ Waksman, S. A., and Woodruff, H. B., *Proc. Soc. Exp. Biol. and Med.*, 1942, **49**, 207.

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Demonstration in Cotton Rats and Rabbits of a Latent Virus Related to Pneumonia Virus of Mice.*

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A previous report from this laboratory¹

described the isolation from Syrian hamsters

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cooperation with the California State Department of Public Health.

¹ Pearson, H. E., and Eaton, M. D., *Proc. Soc. Exp. Biol. and Med.*, 1940, **45**, 677.