

THE INFLUENCE OF CARBON PARTICLES ON THE
DEVELOPMENT OF RAT LEPROSY

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As a part of the control work in connection with a preceding publication (1), the effect of carbon from India ink on the experimental leprosy infection of the rat was ascertained in two experiments.

In the first, explants of inked rat leproma were imbedded beneath the skin of the left flank of four rats, while white (control) explants from the same leproma were imbedded in the opposite flank. There appeared at first to be a slight delay in the development of new lepromas in the black sites, but after three months the degree of infection on the two sides was indistinguishable.

In the second experiment, each of 10 rats received under the skin of the left shoulder, approximately 35,000 bacilli suspended in unwashed India ink 1:50, and the same dose of bacilli in salt solution on the opposite side as control. After 3 months, in 7 animals remaining, the lesions on the inked side were clearly marked by a black area of skin and were more palpable than those on the control side. Three animals had been autopsied. Smears from the rat dying after 27 days revealed no bacilli, while those dying at 32 and 67 days permitted finding a few bacilli in the inked lesions and none in the control lesions. The apparent superiority of results in the presence of carbon might possibly be explained by the greater ease with which these lesions were located and by the doubtful nature of lesions in the control areas.

After 5 months, in 5 animals remaining, the lesions containing carbon averaged 6 mm. in diameter, while the control sites averaged 4 mm. The 2 rats autopsied in the meantime (after 92 and 113 days) were judged to reveal equal numbers of bacilli in smears prepared from the two types of lesions.

After 6 months the two types of lesions were so similar, except in color, that they were not followed further. Cells suspended from the inked lesions were carefully spread on slides for microscopic examination. This material revealed that the presence of carbon did not prevent such cells from becoming stuffed with bacilli in the classical fashion.

As a result of these experiments, and of the demonstration that all the relationships between leprosy bacilli and the fibroblasts cultivated from human lesions can be duplicated with carbon particles, it is felt that finely dispersed carbon is a useful control substance in experimentation on leprosy infections or on multiplication of the micro-organisms.

REFERENCES

- (1) HANKS, JOHN H. The fate of leprosy bacilli in fibroblasts cultivated from lepromatous lesions. *Internat. J. Leprosy.* 15 (1947) 48-64.