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BALB/c mice ears as a potential intradermal-inoculation site for *Mycobacterium leprae* infection studies

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Leprosy, caused by *Mycobacterium leprae*, presents varied immune responses and pathologies, impeding a comprehensive understanding of its pathogenesis. The paucity of robust animal models displaying vigorous immune responses during *M. leprae* infection hampers research efforts. The *M. leprae* mouse foot-pad infection model, introduced by Shepard in the 1960s, primarily assesses bacterial growth but is time-consuming and manifests limited pathology. The notable leprosy burden in India underscores the need for an efficient animal model system facilitating rapid bacterial growth and immune response to elucidate pathogenesis. In this context, we investigate the viability of using mice ears as an inoculation site to understand the disease pathology and immune response. This study proposes mice ear as a more advantageous inoculation site over the foot-pad, owing to technical ease, absence of bone, and enhanced accuracy in bacterial counts. Our preliminary findings in BALB/c mice align with the observation of Duthie *et al.* on the immune response elicited in C57BL/6 following *M. leprae* inoculation, affirming the viability of mice ears for evaluating anti-leprosy treatments and analyzing *M. leprae*-induced inflammatory responses. This research, therefore, aims to contribute towards an enhanced understanding of leprosy pathogenesis and aid in the development of effective interventions in high-burden regions like India.

Keywords: Bacilli, Ear inoculation, Doubling time, Leprosy, Mouse foot-pad