ESTABLISHING SERUM BIOMARKERS OF *MYCOBACTERIUM TUBERCULOSIS* INFECTION IN ASIAN ELEPHANTS

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Mycobacterium tuberculosis (M.tb) infection is a threat to elephant health and conservation and human public health worldwide. Cases of tuberculosis (TB), the disease due to *M.tb* in those susceptible, have occurred on multiple continents and affected both wild and captive elephants. Humans are the natural host for *M.tb* and main source of transmission to elephants. Infection can then spread from elephants to other elephants, to other mammals, and possibly back to humans. The biomarkers CXCL1, MMP8, IL-10, IFN-γ, and TNF-α are known to be involved in immune responses to *M.tb* infection in elephants or other similarly affected species. We used commercially available Enzyme Linked Immunosorbent Assay (ELISA) kits to determine whether these five biomarkers are significantly elevated in the serum of *M.tb* positive elephants compared to *M.tb* negative elephants. We tested 101 samples from six *M.tb* negative elephants and five *M.tb* positive elephants, none of which had known clinical signs of disease. Biomarker concentrations were below the limit of detection for the assay in 100/101 (99%) samples for CXCL1, 98/101 (97%) samples for MMP8, 85/101 (84%) samples for IL-10, 75/101 (74%) samples for IFN-γ, and 45/101 (45%) samples for TNF-α. Multiple *M.tb* positive elephants did not have detectable levels of any of the five biomarkers, suggesting that these biomarkers are not substantially elevated in elephants infected with *M.tb*. More sensitive assays are needed to more accurately determine the concentrations of these biomarkers in elephant serum and better evaluate their utility in diagnosing *M.tb* infection in elephants.