

**Scientific background:** Chikungunya (CHIK), dengue and leptospirosis are important diseases with explosive outbreaks occurring in Sri Lanka. Confirmation of these outbreaks is important for clinicians for proper management of patients but it is difficult to confirm diagnosis of these three diseases only on clinical grounds as some of their clinical symptoms overlap with each other. Enzyme-Linked Immunosorbent Assay (ELISA) can be used for confirmation of these diseases. Use of ELISAs in Sri Lanka is hindered by the high cost of commercial diagnostic kits and inaccessibility of reagents. Further, whole viral/bacterial antigens/lysate used in ELISAs can cause biohazard risk, high production cost and cross reactivity with other organisms of the same genus/family. Therefore, a diagnostic intermediate for ELISA produced at low cost and easily standardized for use in field settings is important.

**Objective:** To assist confirmation of CHIK, dengue and leptospirosis outbreaks through developing rapid laboratory diagnostic assays.

**Methodology:** Novel recombinant protein antigens for all three diseases were prepared. Indirect ELISAs using each novel recombinant protein as a capture antigen for detection of both anti-IgM and IgG antibodies of each disease were developed. Potential use of each protein as a diagnostic tool for the detection of both IgM and IgG antibodies produced against the particular disease organism was evaluated with currently available diagnostic assays including the Gold standard assay using a large panels of well characterized serum samples.

**Major findings:** Single recombinant protein antigen to detect both IgM and IgG antibodies of each disease was developed and evaluated.