

# **THE REACTIVITY OF RECOMBINANT CHIKUNGUNYA VIRUS E2 PROTEIN UNDER REDUCED AND NON-REDUCED CONDITIONS**

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## **ABSTRACT**

Chikungunya virus (CHIKV) is a re-emerging virus which causes Chikungunya fever. The symptoms are very similar to other arbovirus infections especially dengue. In countries where both viruses are circulating, differential diagnosis is crucial to avoid misdiagnosis for proper clinical treatment and management. The objective of this study is to evaluate CHIKV E2 protein as target antigen for serological differential diagnosis. CHIKV E2 protein was expressed and purified and was tested against serum from different categories which are the chikungunya positive and negative serum, dengue positive and healthy human serum. We found that the recombinant protein was reactive against the chikungunya positive serum and no reaction was detected with chikungunya negative serum under both reduced and non-reduced conditions. Interestingly, the antibodies in dengue positive and healthy human serum recognized the recombinant CHIKV E2 protein under reduced but not under non-reduced condition. This finding suggests the binding under non-reduced condition (conformational epitope) is specific to the chikungunya antibodies and non-specific binding is observed under reduced condition (linear epitope). However, this finding needs to be further confirmed by using more panels of serum samples from each of the category to assess the potential of using this recombinant CHIKV E2 protein in differential assays.

**Keywords:** Chikungunya Virus; E2 Protein; Reduced; Non-reduced.

## **1. INTRODUCTION**

Chikungunya virus (CHIKV) was first isolated in Tanzania in 1953 and “Chikungunya” in Makonde language means to walk bent down or become contorted which is seen in a person infected with CHIKV (Robinson, 1955). CHIKV belongs to the genus *Alphavirus* of the family *Togaviridae*. As a member of Semliki forest antigenic complex, CHIKV is small, icosahedral-shaped, enveloped and about 70 nm in diameter (Simuzu, Yamamoto, Hashimoto & Ogata, 1984). The genome of CHIKV is approximately 12 kb and consists of two open reading frames coding for four nonstructural proteins (nsP1 to nsP4), three structural proteins (capsid, E1 and E2), and two small cleavage products (E3 and 6K) (Zuckerman, Banatvala, Pattison, Griffiths & Schoub,

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