Chikungunya (CHIK) is an important arthropod-borne viral disease, disseminated widely through Africa, South-East Asia, Western Pacific and India (Pastorino et al., 2005). It is one of the six major vector borne diseases endemic to India and has reemerged causing severe mortality during the recent outbreak (Dhiman et al., 2010). It has been relatively understudied because of its restricted sporadic outbreaks in Africa and Asia. With increase in globalization and expansion of mosquito vectors to new geographical areas, Chikungunya virus (CHIKV) is no longer restricted to developing countries. Currently nearly 40 countries are under the grip of CHIKV disease with more than 5-10 million people as its victims.

After quiescence of about three decades CHIKV re-emerged in India during 2005-2006 and the outbreak is ongoing. Andhra Pradesh was the first Indian province to report CHIKV suspected cases in December, 2005, and is also one of the worst affected diseases and more than 80,000 suspected cases reported (Pialoux et al., 2007). Investigations carried out in National Institute of Virology (NIV), Pune from several districts of Andhra Pradesh, Karnataka and Maharashtra confirmed CHIKV as the causative agent of the epidemic (Mohan et al., 2010).

CHIKV activity was almost declined by the end of June 2007 in Andhra Pradesh and it was assumed that the CHIKV epidemic has come to a halt in Andhra Pradesh. In between March 2008 and February 2009, the Mobile Medical Unit (MMU) of District Medical Health Office (DMHO), Kadapa (formerly
known as Cuddapah) District of Andhra Pradesh observed a huge influx of patients with crippling arthralgia and fever in many villages. Suspecting the mysterious fever as Chikungunya infection the District Medical Health Officer arranged a field visit by Mobile Medical Unit to all the affected villages. In the present study with the approval of Kadapa district medical health officer, we joined the mobile medical unit to study the surveillance and seroepidemiology of CHIKV infected patients.

During the epidemic, clinical triad fever, rashes and arthralgia is suggestive of CHIKV infection. The symptoms of CHIKV infection are most often clinically indistinguishable from those observed in Dengue fever and viruses of both diseases are transmitted by the same species of mosquitoes. Co-infections of CHIKV and DENV have been reported earlier, as well as during the current outbreak (Myers and Carrey, 1967; Hapuarachi et al., 2008; Chahar et al., 2009; Chang et al., 2010 and Singh et al., 2011). Hence rapid diagnosis of CHIKV during epidemics is quite essential to distinguish it from Dengue.

Diagnosis of CHIKV infection is mostly based on serological and PCR techniques. Serological diagnosis is reliable 5-6 days after the clinical onset of disease. The ideal tests for CHIKV detection during acute phase (before day 5 post-onset) are virus isolation, antigen detection and PCR assays (Lanciotti et al., 2007). Virus isolation followed by detection of viral antigens is a sensitive method but must be performed under BSL-3 facilities. These techniques are expensive, time consuming and require expertise and hence cannot be used in all the laboratories (Lahariya and Pradhan, 2006). Till date there are no widely available CHIKV antigen commercial assays (Sam et al., 2011).
Nucleic acid amplification by PCR is an appropriate diagnostic tool at an early stage of infection, while the patient is in viremic stage. High viremia (upto $3.3 \times 10^9$ copies/ml) was observed in some CHIKV infected patients (Parola et al., 2006). Till date only two RT-PCR assays have been described to detect CHIKV (Hasebe et al., 2002; Pfeffer et al., 2002). E1 gene of CHIKV was highly conserved and suitable for diagnostic purposes (Hasebe et al., 2002). The E1 gene was also shown to be of phylogenetic importance in grouping the CHIKV isolates into East Central South African (ECSA), Asian and West African genotypes (Powers et al., 2000 and Hasebe et al., 2002).

Diagnosis of CHIK during early stages of infection was the major challenging task for the physicians. The rapid diagnosis of CHIK during an outbreak is critical for a timely control programme. Therefore IgM antibody based diagnosis of CHIK is found to be cost-effective and more useful for the early diagnosis. Anti Chik IgM is detectable at an average of 2 days onset of CHIKV infected patient serum and persists for several weeks to months. Therefore even acute phase samples (<5 days pi) are used for the detection of IgM antibodies. IgM capture ELISA is used as a reliable technique for detecting anti CHIKV antibodies (Bodenmann and Genton, 2006). Hence, keeping all this in view and to perform the early diagnosis of CHIK the work was undertaken with the following objectives:
➢ To carry out the Seroepidemiology of Chikungunya in suspected patients from Kadapa district of Andhra Pradesh

➢ To perform early diagnosis of CHIK by detecting IgM antibodies to help doctors in determining the prognosis and line of treatment of patients

➢ To compare the sensitivity of Rapid Immunochromatographic assay (RICA), and IgM Antibody Capture – Enzyme Linked Immunosorbant Assay MAC-ELISA, for detection of anti-Chik IgM antibodies in sera of patients

➢ Molecular diagnosis of CHIK by the amplification of E1 gene of CHIKV in suspected sera samples using RT-PCR technique.