## ABSTRACT

Dengue is a major public health problem in the tropics including Sri Lanka, causing millions of deaths each year. *Aedes aegypti* is one of the principle vectors of dengue in urban areas in Sri Lanka. Precise identification of the mosquito vector is important in many respects including in vector surveillance and control strategies. Conventional morphological identification methods of mosquito vectors have its limitations, and increasingly DNA based molecular identification methods are being relied on. In molecular identification of mosquitoes, the DNA from the adult or its body parts is usually used. This study examined the utility of eggs, larvae, pupae and associated exuviae as alternate sources of DNA for the molecular identification of *Aedes aegypti* by PCR amplifying the COI and rRNA (16S and 12S) gene fragments.

The mosquito adults, eggs, immature life cycle stages, eggs shells, exuviae, and desiccated eggs were collected by rearing mosquitoes in the insectory and setting up experiments under laboratory condition. The genomic DNA isolated from each source was quantified. . The CO1, 16S and 12S amplification were carried out with each of the laboratory specimens by PCR.

Results showed that PCR amenable DNA could be isolated from each life-cycle stage including the eggs, larvae, pupae and adults. The skin parts left out during metamorphosis, such as the egg shells and exuviae of larvae and pupae were also PCR positive. In the time scale analysis of exuviae it was shown that PCR amenable genomic DNA could be isolated not only from fresh exuviae specimens of 0day of post eclosion but also from the exuviae of 13days post eclosion. In the study it was also proven that eggs of *Aedes aegypti* desiccated for up to 8 weeks are a suitable source of genomic DNA for PCR amplification studies.

Genomic DNA that can be amplified by PCR is a pre-requisite for molecular identification of species. The ability to survey all life cycle stages of the *A. aegypti* vector and their shed skin parts will contribute to the rapid identification of the adult and their immature stages and permit the quick assessment of disease transmission risks and facilitate surveillance and implementation of control measures in Sri Lanka.