A brief account of malaria research conducted using *Plasmodium cynomolgi*/toque monkey system in the Malaria Research Unit (MRU)

Sisira Pathirana
Department of Parasitology, Faculty of Medicine, University of Colombo

Plasmodium cynomolgi/toque monkey (*Macaca sinica*) system has a close resemblance to *P. vivax* in humans therefore this system can be exploited to study various aspects of vivax malaria, which would otherwise difficult or not possible to study in humans. Ideally inbred monkeys should be used in this type of research however it is not possible in the current context. Therefore wild-caught monkeys are being used with ethics clearance by the Ethics Review Committee of the Faculty of Medicine Colombo and with permission of the Department of Wild Life Conservation of Sri Lanka. Monkeys were caught using traps, screened using microscopy to detect current malaria infections and immunofluorescent test(IFT) and ELISA were performed to detect malarial antibodies to exclude monkeys with recent past infections. Depending on the type of research they were to be used for additional investigations such as blood picture, helminth infestations and testing for TB were done to make sure that the animals used in the study were healthy. Generally simple invasive procedures are performed on the animals and are released back to their original habitats at the end of the study after confirming that they are free from malaria. This simian malaria system is being used for malaria research in the MRU from late 1980s.

Majority of the monkeys caught were males (65%). Sixteen percent of the animals were positive for current malaria infections, majority of which was due to *P. cynomolgi*. *P. simiovale* and *P. inui* were also identified using microscopy. Some cases were morphologically suspected as *P. fragile* however since species identification was not an objective of our studies efforts were not made to identify parasite species present. Thirty five percent of blood smear negative animals brought to Colombo were positive by IFT and 23% were positive by ELISA indicating that they have had recent past malaria infections. These figures varied according to the season of the year and also due to the place they were caught from.

Research studies conducted at MRU using this primate malaria system included: factors affecting gametocyte infectivity to mosquitoes, pattern of relapse infections and how it affects transmission blocking immunity, Pc-MSP1 pre-clinical trials including testing of efficacy of different adjuvants, studies on strain-specific protective immunity, origin of relapse infections and factors affecting relapse rate. Studies for the identification of genes coding strain-specific protective immunity are still being carried out.