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PREVALENCE OF MALARIAL PARASITE INFECTIONS IN DIFFERENT SPECIES OF ANOPHELINES IN AN IRRIGATED SETTLEMENT SCHEME IN SRI LANKA

A study on adult anopheline ecology and malaria vector incrimination was carried out from November 1998 to January 2002 in Kandalama, an irrigated settlement area located in the dry zone of Central Sri Lanka to plan a large-scale larval control trial. Adult mosquitoes were collected using cattle baited huts, cattle baited nets traps, light traps hung beside occupied bed nets, partial night human landing collections and pyrethrum spray sheet collections. A total of 11,342 mosquitoes belonging to 12 species were caught by six methods. The heads and thoraces of mosquitoes were tested for the presence of circumsporozoite proteins (CSP) of P. vivax and P. falciprum. An. nigerrimus, An. subpictus and An. tessellates being the most prevalent

species. Residual house spraying with lambdacyhalothrin WDP is being used to control malaria in this area. The geographical reconnaissance survey carried out in the area revealed that most of the males over 15 years of age were employed in paddy and vegetable cultivation. The majority of the huts occupied by the farmers are semi-permanent, mostly the roof made out of woven palm leaves and the sides of the hut left open.

From Enzyme Linked Immunosorbent Assays (ELISA) for circumsporozoite protein of either P. falciparum or P. vivax, five anopheline species namely An. culicifacies, An. nigerrimus, An. subpictus, An. tessellatus and An. vagus were found to carry CSPs of either P. vivax or P. falciparum. The proportion positive for CSPs of P. vivax in An. culicifacies, An. subpictus, An. tessellates and An. vegus were significantly different ($X2 = 54.47$, $df = 4$, $P=0.000$). The highest proportion of positive was observed from An. subpitus. The sporozote rate of P. falciparum in A. nigerrimus, An. subpictus and An. vagus were significantly different ($X2=5.76$, $df=3$, $P=0.05$).

The results of the ELISA seem to indicate that An. subpictus act as a major vector in this study area. All the 16 P. falciparum and P. vivax CSP positive mosquitoes were collected from cattle baited hut collections. None of the anophelines collected from human landing and light trap collections were CSP positive. Such observations indicate the importance of incrimination of malaria vectors from the entire anopheline mosquito population in a given human settlement. The recognition of vectors responsible for malaria transmission in a given situation is also vital to the understanding of the epidemiology and planning of malaria control strategies.