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Abundance, biting habits and insecticide susceptibility in malaria vectors in the Deduru Oya irrigation project area in the Kurunegala District of Sri Lanka

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The Deduru Oya irrigation project, a large scale development project initiated recently, may have threatened the malaria elimination programme implemented in Sri Lanka targeting a total elimination of indigenous transmission of malaria towards end of 2014. The present study was undertaken to determine the abundance, biting habits and insecticide susceptibility of *Anopheles culicifacies* and *An. subpictus* – primary and secondary vectors of malaria respectively, in the affected intermediate zone area of the Kurunegala District. *Anopheles* mosquitoes were collected monthly from two localities of the Deduru Oya project area from January 2010 - December 2012 using cattle baited net trap / hut, hand collection, human landing and larval collections. Insecticide susceptibility tests were performed with F1 progeny of the *Anopheles culicifacies* and *An. subpictus* according to World Health Organization procedure with DDT (4%), fenitrothion (0.1%), deltamethrin (0.05%) and bifenthrin (2%). Larval susceptibility to 0.25% temephos was also tested. Out of 36,806 adult female *Anopheles* mosquitoes collected, *An. Culicifacies* accounted for 4.2% and *An. subpictus* for 12.5%. Other species were *An. peditaeniatus* (61.5%) *An. barbirostris* (9.9%), *An. varuna* (4.8%) and *An. jamesii* (4.5%). Out of 7819 larvae collected from eight habitat types, 41.04% were *An. culicifacies* (71.64% in rock pools, 16.39% river margins, 11.28% sand pools) and 8.70% were *An. subpictus* (76.62 in rock pools, 7.2% canal margins, 6.91% paddy fields).

Outdoor biting was significantly greater ($p < 0.05$) than indoor by both vectors. This may possibly be due to the repellent effect of deltamethrin treated mosquito nets used by the villagers. Both species were resistant to DDT and fenitrothion. *An. Culicifacies* was susceptible to bifenthrin, deltamethrin and temephos. *An. Subpictus* was susceptible to bifenthrin but resistant to deltamethrin and temephose. The presence of both vector species in the Deduru Oya irrigation project area increases the possible risk of malaria epidemics in the district.

Key words – *Anopheles* vectors, Insecticide susceptibility