

**Variation in microfilaria uptake and infective larvae output of *W. bancrofti* in *C. quinquefasciatus* in relation to microfilaria density of the carrier in bancroftian filariasis in Sri Lanka**

One hundred and eight artificial infection experiments were carried out using the microfilaraemics with microfilaria (mf) density ranging 0-996mf/60 $\mu$ l (1-12415mf/ml), to study the transmission dynamics of bancroftian filariasis in Sri Lanka, including the variation in mf uptake and infective larvae (L<sub>3</sub>) output. A batch of 200-300 laboratory bred, 6 day old, *C. quinquefasciatus*, starved for 36 hours fed on the forearm of each carrier. Twenty to twenty five percent gorged females were dissected immediately for individual mf uptake. The balance was dissected individually for developing larvae after 13 days of incubation. Individual parasite counts were plotted against the mean human mf density and arithmetic mean and the variance in mf uptake and L<sub>3</sub> output

were computed for each experiment. Prevalence for mf and /or L<sub>3</sub> positive mosquitoes and the frequency distribution of mosquitoes with range of parasite (mf of L<sub>3</sub>) counts were studied against the host mf density.

Variance of both mf uptake and L<sub>3</sub> output increased with increasing host mf density. Variation of microfilaria uptake was much larger than that of L<sub>3</sub> output for particular host mf density, indicating the depletion of parasites during incubation. It is more significant in higher mf density groups.

The ratio of variance to the mean for mf uptake and L<sub>3</sub> output was significantly greater than 1 indicating the *W. bancrofti* was highly over-dispersed in the vector. Therefore, the use of mean values in filariasis control programmes for evaluation purposes would underestimate the level of transmission. In conclusion, *W. bancrofti* microfilariae and infective larvae in *C. quinquefasciatus* exhibit a negative binomial distribution.