

colonies at AFRIMS. A modified K & D module was designed and protocols for use of the module was developed to quantify mosquito biting responses *in vitro*. Dose-response assays were conducted against the three species using DEET and DM159-2. Estimated dose response proportions of repelled mosquitoes were compared to data estimates obtained using *in vivo* human volunteer assays. Feeding percentages are transformed to the prohit, and repellent dosages are transformed into the logarithmic scale. Effective concentration to repel 50% and 95% tested mosquito population are then calculated by method of Goldstein for single curve with graded responses. Results will be discussed.

**Abstract of the Joint International Tropical Medicine Meeting (JITMM). Bangkok, Thailand. 29 November-1 December 2004:239. (Poster)**

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## **NUTRITION ACCUMULATION AND SURVIVAL RATE OF FEMALE *ANOPHELES DIRUS* (DIPTERA: CULICIDAE)**

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Blood is essential for egg production of an autogenous female mosquito since egg production is dependent on blood feeding, and blood meal protein is the prime nutrition source for egg formation. *An. dirus* is the most dominant of human malaria in Thailand, it maintains feeding duality that includes vertebrate blood meals for egg production and sugar meals from plants for the synthesis of flight and survival with energy reserve. Characteristic of adult Diptera is that carbohydrate is the sole energy for flight and lipid is the energy source. When at rest, sugar leads to the deposition of glycogen, lipid in the fat body, and glycogen in the flight muscle. In order to investigate the nutrition accumulation pattern among mosquitoes feeding on 1) sugar only, 2) blood only, 3) blood and sugar, and 4) water only, we observed the survival rate of the mosquitoes with various diets and studied the relationship between each diet against their sizes and survival rate. After laboratory *An. dirus* were reared at different density (50/pan and 500/pan) to produce small and large size adults, we then determined the amount of glycogen, lipid, and sugar in female. Wing length measurement and assays on glycogen, sugar, and lipid were performed on a daily basis for the whole life-time. Since the lipid, sugar, and glycogen content of a single mosquito can be estimated by colorimetric method, sugar content was determined by the anthrone method while the glycogen content was measured by the anthrone method after separation of glycogen with sodium sulphate. Lipid content was determined by extraction of total lipid with chloroform-methanol, conversion of unsaturated lipids to sulfonic acid derivatives, and assay by vanillin-phosphoric acid reagent, respectively. Results and analysis will be discussed.

**Abstract of the Joint International Tropical Medicine Meeting (JITMM). Bangkok, Thailand. 29 November-1 December 2004:233. (Poster)**

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