FIELD EFFICACY OF FOUR INSECT REPELLENT PRODUCTS AGAINST VECTOR MOSQUITOES IN A TROPICAL ENVIRONMENT

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Four insect repellent products, (1) Experimental Repellent Lotion (Bayrepel® 12%), (2) Experimental Repellent Cream (Bayrepel® 5%), (3) Off! Insect Repellent II® Aerosol (DEET 15%) and (4) Off! Skintastic II® Cream (DEET 7.5%) were evaluated simultaneously for their efficacy against vector and nuisance mosquitoes. The aim of this study was to compare the relative efficacy of repellent products (1) and (2) based on a new repellent compound, Bayrepel® (1-piperidinecarboxylic acid, 2-(2-hydroxyethyl)-1-methylpropylester) with DEET (N,N-diethyl-m-toluamide) based repellent products (3) and (4). Evaluation was based on three separate field studies: a daytime study (0900-1700 hrs) in a forested orchard in a suburban area on Penang Island and two night-time studies (2100-0100 hrs), one in an urban squatter residential area and another in a rural residential area on the adjacent mainland of peninsular Malaysia. All three studies were carried out by exposing humans with bare arms (from wrist to elbow) and legs (from knee to ankle) to mosquitoes landing/biting for an eight-hour period. Each left and right limbs were treated with different insect repellents and treatment regimes were alternated accordingly. Each arm and leg was treated with an amount of 0.75 ml/0.63 g and 1.50 ml/1.25 g of insect repellent, respectively. The daytime study indicated that all four repellent products provided complete protection against day biting mosquitoes (*Aedes albopictus* and *Armigeres subalbatus*) in first two hours of exposure. Whilst, the night-time study in the squatter area showed that product no. 1 and no. 3 were more superior than others with no landing/biting of mosquitoes (*Culex quinquefasciatus*) up to 4 hours of posttreatment. However, in the field trial at rural area, repellent product no. 1 and 3 exhibited complete protection against *Anopheles* spp., only up to the first hour of posttreatment. Nevertheless the application of these four repellent products significantly reduced ($P < 0.05$) the landing/biting of mosquitoes on the treated limbs compared to the untreated limbs throughout the 8 hour experiment period in all three field trials. In conclusion, all four repellent products were found to provide reliable protection against vector and nuisance mosquitoes in both the day and night field studies. The potential use of repellents for control of vector mosquito is discussed.

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