Inhibiting the Growth of the Aedes aegypti Larvae on Used Car Tires Utilizing Baby Oil Capsules: Dengue Fever Primary Prevention

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Used car tires are often stockpiled, due to lack of effective recycling systems, collecting water and providing a prolific breeding site for the Aedes aegypti mosquito, a vector for several viral pathogens, including dengue. Infection by dengue virus is a leading cause of illness and death worldwide, with 40% of the world's population at risk for transmission. This project sought to study the application of baby oil delivered on gelatin capsules as a practical and inexpensive measure to prevent the growth of this mosquito's larvae on used tires. My previous research suggests that baby oil decreases the water's surface tension and creates a physical barrier causing the larvae to suffocate. The minimum volume of baby oil that achieved the higher larvae mortality and the target concentration for used car tires were determined. Accordingly, baby oil packed in gel capsules was applied to the experimental tire to make a 1% baby oil solution. Two liters of water and 35 larvae were added to experimental and control tires. A total of 7 iterations were made. The mortality risk for the larvae in the experimental tires was 97.1% compared to 8.98% in the controls. The results were statistically significant (p-value<0.0001). The addition of baby-oil filled gel capsules resulted in an effective way of preventing the growth of the mosquito larvae placed on used car tires. This finding could indicate a practical public health measure for the primary prevention of dengue fever, and other vector-borne diseases, in areas where used tires represent a significant breeding site.

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