



Efficacy of Insecticide Treated Nets against Mixed Population of Mosquitoes at Dayalbagh-Agra

***Namita SONI, Soam PRAKASH**

Environmental and Advanced Parasitology and Vector Control Biotechnology Laboratories, Faculty of Science, Department of Zoology, Dayalbagh Educational Institute, Dayalbagh, India

***Corresponding Author:** Email: namitasoni7@gmail.com

(Received 26 Nov 2014; accepted 11 Dec 2014)

Dear Editor-in-Chief

In the present investigation, we have reported the efficacy of deltamethrin treated nets against the mixed population of mosquitoes (*Culex quinquefasciatus*, *Anopheles stephensi* and *Aedes aegypti*). Mosquitoes are foremost in man's war against insects. Mosquitoes are responsible for spreading serious diseases like malaria, filariasis dengue, chikungunya etc. *Anopheles* species are the most important species as they are capable vector for malaria parasites. Malaria parasite alone can kill more than a million people every year (1). The estimated five hundred fifteen million cases of human malaria each year are generally caused by four species, including *Plasmodium falciparum*, *P. ovale*, *P. vivax* and *P. malariae*, are transmitted by the bites of female *Anopheles* mosquitoes (2).

Culex mosquitoes are painful and persistent biters and are responsible for filariasis. Approximately 66% of those at risk of infection live in the WHO South-East Asia Region and 33% in the African Region (3). *Aedes* mosquitoes on the other hand are also painful and persistent biters. *Aedes aegypti* is responsible for spreading dengue and chikungunya. The World Health Organization estimates that around 2.5 billion people are at risk of dengue (4). Efficacy of deltamethrin-impregnated bed net at target dosage of 25 a.i. mg/m² and the incidence of malaria have been compared in treated and untreated villages (5).

The efficacy was performed at single concentration. The mortality was observed at different interval until 24 hours. The experiment was repeated for three times with four different experimental designs. The 50 mosquitoes were used for efficacy test. The tests were performed as:

1. Tests between two small nets (one is non-treated and another is treated) (A)
2. Tests between one is treated and one is non-treated nets which is covered with a large non-treated net (B)
3. Tests between one is treated and one is non-treated nets which is covered with a large treated net (C)
4. Tests between two small treated nets which is covered with large non-treated net and two are non-treated nets which is covered with a large non-treated net (D)

The mortality was observed at different interval until 24 hours. The entire three mosquito species showed 50-100% mortality with single tablet against the four different experimental designs (1). The efficacy was performed between one is non-treated (control) and one is treated nets (Fig. 1-A). The *An. stephensi* mosquitoes have shown 100%, *Cx. quinquefasciatus* 60% and *Ae. aegypti* 60% mortality (2). The efficacy was performed between two small nets (one is non-treated and one is treated) which were covered by a large non-treated net

(Fig. 1-B). The *An. stephensi* mosquitoes have shown 90%, *Cx. quinquefasciatus* 80% and *Ae. aegypti* 70% mortality under small nets. Under the large net 60%, 60% and 50% mortality was observed against the *An. stephensi* *Cx. quinquefasciatus* and *Ae. aegypti* (3). The efficacy was performed between two small nets (one is non-treated and one is treated) which were covered by a large treated net (Fig. 1-C). The *An. stephensi* mosquitoes have shown 100%, *Cx. quinquefasciatus* 80% and *Ae. aegypti* 70% under small nets. Under the large net 80%, 70% and 70% mortality was observed against the *An. stephensi* *Cx. quinquefasciatus* and *Ae. aegypti* (4). The test was performed between two small non-treated which was covered with the

large non-treated net and two small treated nets which was covered with large treated net (Fig. 1-D). The 50 mosquitoes of three species were placed outside the net. In control side (outside) the non-treated net, no mortality was recorded. Whereas, treated outside 20-30% mortality was recorded. Not only was the inside of treated nets but outside also mosquitoes effective. The *An. stephensi* mosquitoes have shown 78%, *Cx. quinquefasciatus* 72% and *Ae. aegypti* 80% under small nets. Under the large net 60%, 60% and 64% mortality was observed against the *An. stephensi* *Cx. quinquefasciatus* and *Ae. aegypti*. The findings provide a better approach to mosquito control.

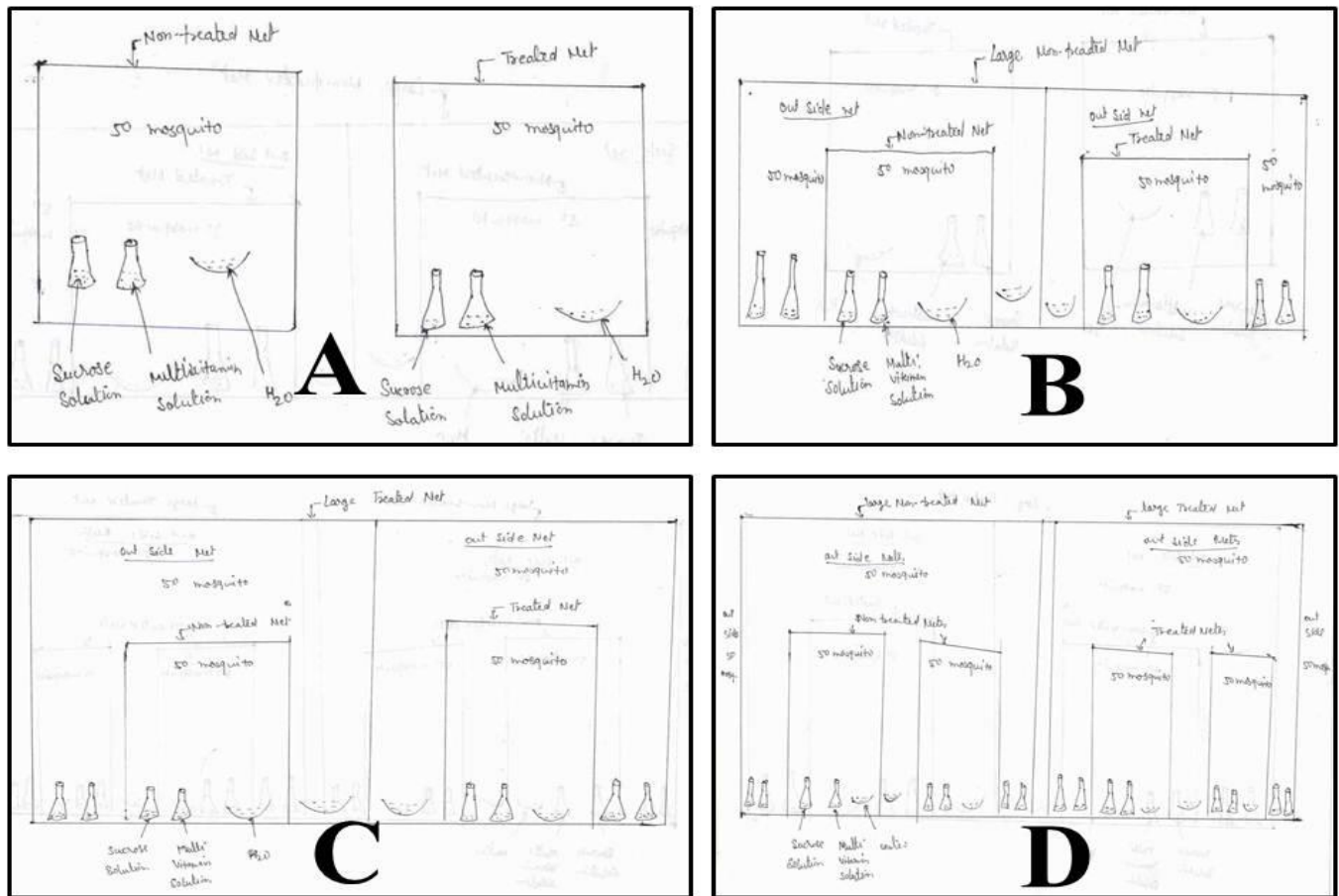


Fig. 1: A: Tests between two small nets (one is non-treated and another is treated). 1-B: Tests between one is non-treated and one is treated nets, which is covered with a large non-treated net. 1-C: Tests between one is non-treated and one is treated nets, which is covered with a large treated net. 1-D: Tests between two small non-treated nets, which are covered, with large non-treated net and two are treated nets, which are covered with a large treated net

Acknowledgements

The authors declare that there is no conflict of interests.

References

1. Dooren GGV, McFadden GI (2007). Malaria: differential parasites drive. *Nature*, 450: 955-956.
2. Snow RW, Guerra CA, Noor AM, Myint HY and Hay SI. (2008). The global distribution of clinical episodes of *Plasmodium falciparum* malaria. *Nature*, 434: 214 – 217.
3. World Health Organization (2010). Global program to Eliminate Lymphatic Filariasis.
4. World Health Organization (2010). Dengue transmission research in WHO Bulletin.
5. Rassi Y, Kamali F, Abai MR, MousaKazemi SH, Vatandoost H. (2002). Efficacy of Deltamethrin impregnated bednets for control of malaria in Dehdasht, Kohgiluyeh & Buyer Ahmad province, Iran, 1997-1998. *Iran J Public Health*, 31:122-125.