



## Considering Alternative Mosquito Repelling Strategies

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It is well known that Pakistan shares one of the greatest burdens in the world with regard to key vector-borne illnesses such as malaria, dengue, leishmaniasis, and chikungunya. This issue gets further pronounced in the monsoon season when stagnant water from the rain acts as an ideal environment for mosquito larvae. While the most popular method for repelling mosquitoes in the world remain the use of DEET containing sprays and creams, there are deeper considerations that need to be looked into. We interviewed attendants of serology proven dengue patients in our center about the methods they employ for mosquito repellence, and while most of them did not use any strategy at all, the most common reported method was the use of mosquito coils which come with their own share of health and environmental risks. (1) When inquired about the use of DEET containing products, an overwhelming majority of the participants cited its cost and need of constant reapplication as the hindrance. It is pertinent to add that most of these people belonged to a lower socioeconomic background and dengue incidence is higher in this class. (2) It makes us consider some of the alternative and more economical approaches that can potentially help in this regard.

To begin with, it was found out that mosquitoes breeding in small containers can effectively be battled by metallic copper, a naturally occurring chemical with its insecticidal properties. (3) Moreover, not only does it provide a sustainable control of container-inhabiting mosquitoes at lower costs, the amount of dissolved copper required is much lower than the crucial value for drinking water and does not harm the ecosystem.

Then there are mosquito repelling plants such as lemon grass, lavender, basil, thyme, all varieties of mint, marigolds, rosemary, geraniums, chrysanthemums, daisies, verbena, and garlic and garlic chives. (4) These plants are incredibly affordable, widely accessible, self-sustaining and suitable with Pakistan's climate.

Finally, the water bag technique. As mosquitoes have compound eyes composed of thousands of separate lenses and are much more sensitive to changes in light, when light strikes a bag of water packed with shiny materials such as coins or aluminum foil, it refracts and confuses the flies which avoids such a place. (5)

To conclude, more awareness needs to be spread about this vector and strategies to preventive it. Additionally, it calls for giving repellents more prominence in public health.

## References

1. Liu W, Zhang J, Hashim JH, Jalaludin J, Hashim Z, Goldstein BD. Mosquito coil emissions and health implications. *Environ Health Perspect*. 2003 Sep;111(12):1454-60. doi: 10.1289/ehp.6286. PMID: 12948883; PMCID: PMC1241646.
2. Zellweger RM, Cano J, Mangeas M, Taglioni F, Mercier A, Despinoy M, Menkès CE, Dupont-Rouzeyrol M, Nikolay B, Teurlai M. Socioeconomic and environmental determinants of dengue transmission in an urban setting: An ecological study in Nouméa, New Caledonia. *PLoS Negl Trop Dis*. 2017 Apr 3;11(4):e0005471. doi: 10.1371/journal.pntd.0005471. PMID: 28369149; PMCID: PMC5395238.
3. Becker N, Oo TT, Schork N. Metallic copper spray-a new control technique to combat invasive container-inhabiting mosquitoes. *Parasit Vectors*. 2015 Nov 9;8:575. doi: 10.1186/s13071-015-1180-z. PMID: 26553319; PMCID: PMC4640347.
4. Mng'ong'o FC, Sambali JJ, Sabas E, Rubanga J, Magoma J, Ntamatungiro AJ, Turner EL, Nyogea D, Ensink JH, Moore SJ. Repellent plants provide affordable natural screening to prevent mosquito house entry in tropical rural settings--results from a pilot efficacy study. *PLoS One*. 2011;6(10):e25927. doi: 10.1371/journal.pone.0025927. Epub 2011 Oct 12. PMID: 22022471; PMCID: PMC3192125.
5. Grützmacher A.D., Nakano O. Behavior of house fly, *Musca domestica* L., in relation to transparent plastic bags with water. *An. Soc. Entomológica Bras*. 1997;26:455-461. doi: 10.1590/S0301-80591997000300007.

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