

Brief Guide to bite avoidance products for travellers

Advising travellers on the measures to avoid bites from arthropods, particularly mosquitoes, is one of the most important risk management strategies for travellers to countries where a variety of arthropod borne diseases are endemic. This brief guide will focus on strategies to avoid mosquito bites but mention will also be made regarding others such as ticks. As well as employing a variety of products there are a number of other important measures that the traveller can employ, which includes wearing long sleeves and trousers when mosquitoes are feeding and tucking trousers into socks when ticks may be present in the undergrowth.

This guide will be examining the various products and devices that may be obtained by the traveller, which essentially fall into three types:

- Repellents applied to the skin
- Area repellents in which a vapour of an insecticide or other substance is released into the air
- Fabric impregnation

All travellers to areas where arthropod-borne diseases are present should be advised to obtain products covering the first two strategies. Depending on the circumstances fabric impregnated products may be desirable such as in malaria endemic areas where the type of accommodation indicates that an insecticide treated bed net should be used.

Repellents applied to the skin

The gold standard repellent remains diethylbenzamide (DEET) and is the first line choice, as advised by the HPA Advisory Committee on malaria prophylaxis (ACMP), when visiting malaria endemic areas. There is much debate about the 'strength' of DEET and the ACMP recommends 50%. Put simply, up to a point the more of the active ingredient applied the longer it will last. So you could achieve the same longevity from applying a lot of a 20% product as a little of a 100% product. Taking into account the sort of volumes people normally apply then 50% is optimal. The benefits of using DEET in malaria endemic areas far outweigh any potential considerations of toxicity, even in children. There are from time to time scare stories of some new research that indicates a potential toxicity for DEET, but none to date have provided any robust evidence for changing the recommendations on DEET usage.

Just with any medicine it is no use recommending a particular product if adherence is likely to be poor, be it due to cosmetic acceptability or fears of adverse effects. Two repellent ingredients can be recommended as a second line choice; lemon eucalyptus as in the Mosiguard range and icaridin used in Autan products. There is some evidence regarding the equivalence of icaridin (also known as picaridin and saltidin) to DEET against some important species of mosquito and that dose for dose it may even last slightly longer than DEET. However, the maximum concentration in icaridin products is 20% so it is unlikely to last as long as a 50% DEET product in normal use. Similarly the data from lemon eucalyptus would indicate that a 50% DEET product is somewhat more reliable. One other commonly used ingredient is known as IR3535 but some experts believe that it is less effective than other repellents against the *anopheles* species of mosquito which transmits malaria. A further

confusing element for travellers is that it is not always obvious as to the type or concentration of active ingredient in the product and it may be best to recommend particular brands.

There is no evidence supporting the use of vitamin B as a repellent. Similarly volatile oils such as citronella are not as effective as the repellents described above.

Area Repellents

One of the most readily available are the plug in devices that heat either a small mat or a liquid that vaporises an insecticide. These are useful for clearing a relatively well screened or sealed air conditioned room of mosquitoes that may have found entry, In poorly screened rooms or when camping then a mosquito net impregnated with insecticide should always be recommended, Another useful product are the mosquito coils that burn and slowly smoulder to release the insecticide. They are only licensed for outdoor use so can be employed when sitting out in the open air, particularly in the evening. As it is likely the people will move outside the area where the coil is being burned a repellent should still be applied. The so called 'electronic buzzers' that are claimed to emit a sound deterring mosquitoes should not be recommended for areas where mosquito born diseases are a risk.

Fabric impregnation

All mosquito nets must be treated with a pyrethroid insecticide. Most nets require retreatment with insecticide after several months of use, but there are also available long acting nets where the insecticide impregnation will last the lifetime of the net e.g. until it develop a tear.

Clothing can be treated with insecticide which can be used in addition to applying repellent to exposed skin as this gives a greater level of protection against mosquitoes than repellent alone. The treatment will last a number of weeks and one or two cloth washes. Treatment of socks with insecticide is also a useful strategy for reducing tick biting. Bugproof (Nomad) is licensed for such clothing treatment. Ecoguard Fabric Spray can be used on tents and rucksacks so could be useful when camping out.

Contacts for specialist products

Nomad www.nomadtravelstore.co.uk

Lifesystems www.lifesystems.co.uk

Roaming fox www.roamingfox.co.uk

CarePlus www.careplus.nl

Further Reading

Prevention of Bug Bites, Stings, and Disease by Daniel Strickman, Stephen P Frances, and Mustapha Debboun. Oxford University Press 2009