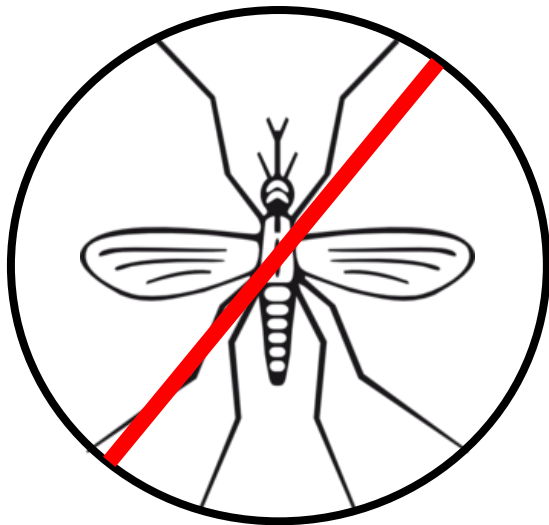




Mosquito Repellents



Introduction

Nestled within South East Asia, the tropical island of Singapore is prone to the spread of mosquito borne diseases such as dengue. Most recently, the Zika virus infection had found its way into Singapore as well. One of the most effective ways to reduce the risks of contracting mosquito borne disease is to prevent mosquito bites. Choosing a suitable mosquito repellent is thus crucial.

Types of mosquito repellents

	Ingredients
Conventional Repellents	DEET
	Picaridin / Icaridin
Biopesticide Repellents	P-methane-3,8-diol (PMD) / OLE*
	Wild tomato extract (IBI-246)
	IR3535
Others	Citronella
	Melaleuca oil (Tea tree oil)
	Lemongrass
	Natural essential oil

*Refers to refined oil of lemon eucalyptus and not to the pure essential oil of lemon eucalyptus.

DEET – The GOLD standard



- The higher the concentration of DEET, the longer the duration of protection against mosquito bites.
- However, DEET >50% provides no added protection.
- ! DEET damages certain synthetic fibers, plastics, watch crystals, leather, painted or varnished surfaces including vehicles.
- ! A higher concentration of DEET should be used when:
 - Insect infestation is high
 - Outdoors duration > 3 hrs
 - Excessive sweating is expected in climate of high temperature and humidity

Patches vs Sprays vs Lotion

	Ingredient	Benefits
Patches	Generally non-DEET	Not absorbed into the blood as it should be stuck onto clothing and not directly onto the skin
Sprays	DEET and non-DEET	Can be sprayed onto exposed skin, as well as clothing
Lotions	DEET and non-DEET	Only applied onto exposed skin. Generally more skin-friendly as compared to sprays

- ! Multiple patches may be recommended for children and adults whom are larger in size due to their larger body surface area

Use of mosquito repellents in children

Conventional Repellents	DEET	< 2mo: Avoid > 2mo: 10-30%
	Picaridin / Icaridin	< 2mo: Apply onto clothes
Biopesticide Repellents	P-methane-3,8-diol (PMD) / OLE*	< 3yo: Avoid. Avoid use on face & hands of small children
	Wild tomato extract (IBI-246)	Safe for children
	IR3535	> 6mo: Safe
Others	Citronella	Avoid in < 2yo due to insufficient data
	Melaleuca oil (Tea Tree oil)	Avoid in < 12mo
	Lemongrass	No data
	Natural essential oil	No data

! The American Academy of Pediatrics advises against direct application of repellent on infants < 2 months.

Use of mosquito repellents during pregnancy & breastfeeding

- No added precautions are required for pregnant or nursing women as recommended by U.S. Environmental Protection Agency (EPA).
- Only DEET has been studied in human pregnancy.
- DEET is safe during pregnancy (2nd & 3rd trimester). It is suggested to spray onto clothing instead of the skin during first trimester to minimize absorption.
- Alternative insect repellents recommended by the Centers for Disease Control and Prevention (CDC) during pregnancy include Picaridin, IR3535 and PMD/OLE that is registered with U.S. EPA.
- Do not apply insect repellents to the nipple area so the baby cannot get any in the mouth while breastfeeding.

Application of mosquito repellents

DOs

- ✓ Use **just enough** repellent to cover exposed skin and/or clothing.
- ✓ When using **on children, apply to your hands first and then apply** it on the child.
- ✓ Apply **sparingly around the ears**.
- ✓ Use of repellent **may cause skin reaction** such as rashes in rare cases. Discontinue use if this occurs.
- ✓ **Wash** your children's skin **with soap and water to remove any repellent** when they **return indoors**, and wash their clothing before they wear it again.
- ✓ Stick the patch onto your **clothes or to a location/article** close to you (eg. handbag).

DON'Ts

- ✗ Spray in **enclosed areas or near food**.
- ✗ Apply **over cuts, wounds or irritated skin**.
- ✗ Use **under clothing** (avoid occlusion).
- ✗ **Spray directly onto face**. To apply to the face, spray on hands first and then apply to face.
- ✗ Apply **to eyes and mouth**.
- ✗ Use products that **combine DEET with sunscreen**. The DEET may make the sun protection factor (SPF) less effective.
- ✗ Place the patch **directly onto the skin**.
- ✗ Apply repellent onto children's hands because they tend to put their hands in their mouths.

Images from:

Mosquito & gold medal - <http://www.clipartpanda.com/>

Tips from your pharmacist

- Always read the product information to understand how frequently to re-apply.
- Duration of protection provided by a mosquito repellent may be reduced by swimming, washing, rainfall, sweating or wiping.
- Sunscreen should be applied first followed by a suitable mosquito repellent 15-30 minutes later.
- For babies < 2 months old, protect them by draping mosquito netting over their carrier or car seat. Netting should have an elastic edge for a tight fit.

Other ways to reduce bites from mosquitoes

- ✓ **Wear long sleeved clothing and long pants** when outdoors.
- ✓ Avoid using fruity or floral scent as they may attract mosquitoes.
- ✓ Keep mosquitoes outside by either using **air conditioning or a window screen**.
- ✓ **Avoid going outdoors at dawn and dusk** as mosquitoes are generally more active during those hours.

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Disclaimer

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Prepared by: Clara Lin (Pharmacist @ Watsons Terminal 3 Transit North)

Vetted by: Chung Wing Lam (Principal Clinical Pharmacist @ Watsons Ngee Ann City)