

# Medical Entomology over Mosquito Species like Culex, Anopheles, Aedes

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**Abstract :** Medical Entomology is most Proficient usage in present generation. It Mention about the study of various diseases that are affected by Arthropods. While Arthropods causes variety of diseases but we majorly concentrate on Mosquito related diseases in this paper. We highlight about Species formation and spreading of diseases over humans, Differences in species of Mosquitoes all over India and also the positioning of Mosquitoes at the time of Biting or resting phases over human. Transferring of diseases from human to human is also briefed with Remedies provided.

**IndexTerms -** Entomology, Medical Entomology, Culex, Anopheles, Aedes

## I. INTRODUCTION

In Medical Entomology phase we observe four types of Mosquito Species which are present all over India. Though Mosquitoes we see are small midge like flies belonging to the family of Culicids. Here mostly females are ectoparasites[1], they consists of tube like mouthparts which pierce the host skin to consume blood where many species belonging to these mosquitoes feeds on vertebrates like mammals, birds, reptiles ,amphibians and even some of the fishes includes in it[12]. Rarely mansonias mosquitoes are big and having colors like black and brown with Sparkling on their wings and legs.

We come across many dangerous diseases all over the world where we mostly seen are Malaria, Dengue, Chickengunya and yellow fever[2]. In fact Yellow fever is not present in India but seems to be more dangerous. We Observe mosquitoes won't cause these diseases but they act as vectors to transmit diseases from person to person. We also see that they act as active species at warm climates. They act as Vectors for most dangerous Diseases called as west Nile fever, Viral Arthritis Etc..[3]. Other observation includes is they often grow in salt water conditions only and some of them grow in both salt and fresh waters. Mosquito species and their differences are keenly discussed in Observation.

## Observation:

Anopheles Mosquito:

It is also well known as mid night timing Mosquito where it bites at mid nights. This Mosquito mostly spreads malaria to human kind that too who majorly lives in endemic areas. Anopheles gambiae is mostly dangerous in transmitting the most dangerous malaria parasite species in my Observance. Where this is also serve as a vector for Filariasis which caused due to Wuchereria bancroftie[4]. This Filariasis also called as Elephantiasis[5]. In my Experimental Research we found the perfect process that how malaria Transmits from person to person. This was explained with a figure 2.1.

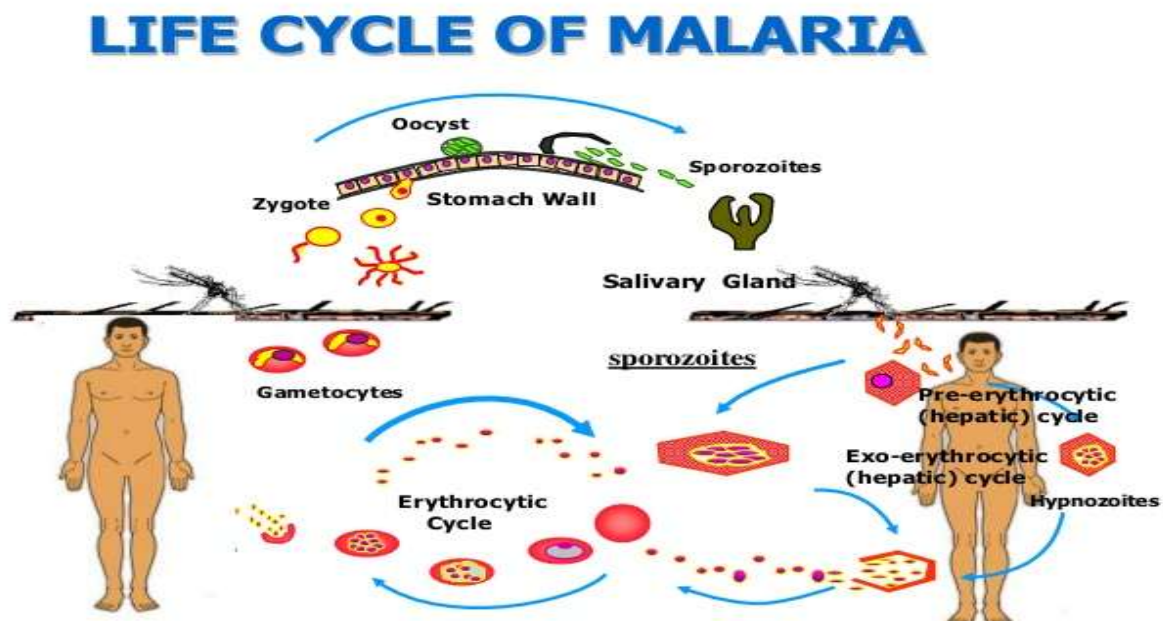


Fig 2.1 Life cycle of Malaria Parasite

**Aedes Mosquito:**

It is well known as Tiger Mosquito while it has white strips on black body. It is also mentioned as day time mosquito[6]. In our experimental research we observed that Aedes mosquitoes are first described and named by German Entomologist Johann Wilhelm Meigen in 1818[9]. This transmits dengue fever which is most dangerous disease in world which is caused by Aedes Aegyptie[8]. In my Experimental research the carrying of dengue by Aedes Mosquito from person to person can be explained in the Figure 2.2.

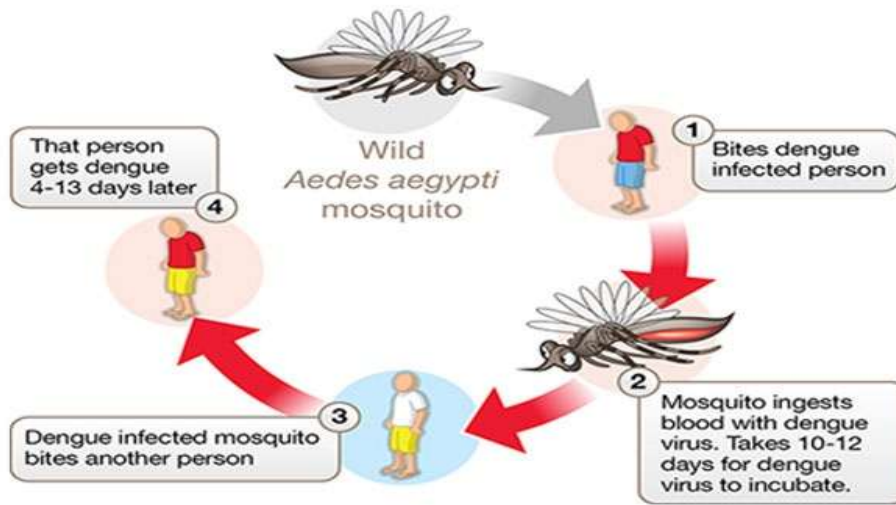


Fig 2.2 Dengue transmission from Person to Person.

**Culex :**

It is well known as Nuisance Mosquito where it is said to be early evening mosquito. In our Experimental Research Culex mosquito mostly affect birds and Animals when compared with humans. This is considered to be the most dangerous mosquito which carries disease called West Nile virus[7]. The carrying of West Nile Virus by Culex mosquitoes from mosquitoes to animals and birds as well as humans are detailed in Fig 2.3.

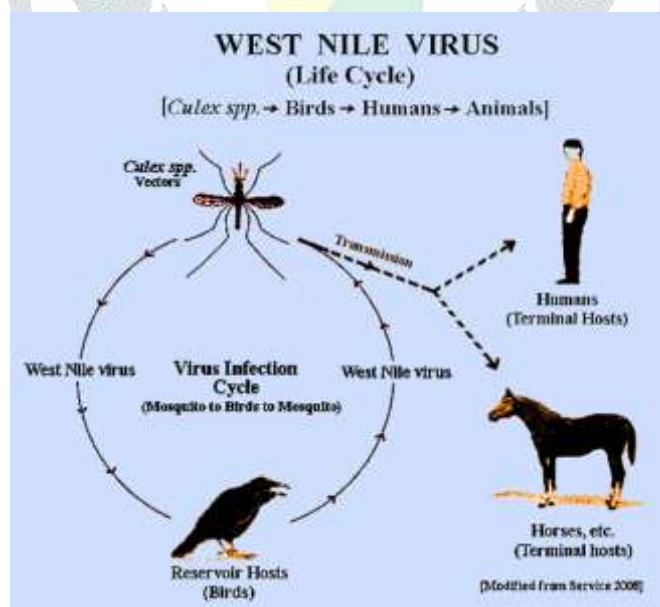


Fig 2.3 Life Cycle of West Nile Virus

**Related Work:**

Life Cycle of Mosquitoes exist in 4Stages shown in Table 1

STAGE/Species	Aedes	Anopheles	Culex
Eggs	<ul style="list-style-type: none"> <li>Laid singly</li> <li>Cigar shaped</li> </ul>	<ul style="list-style-type: none"> <li>Laid Singly</li> <li>Boat shaped</li> </ul>	<ul style="list-style-type: none"> <li>Laid in raft shaped cluster</li> </ul>

	<ul style="list-style-type: none"> <li>• Laterally Floats</li> </ul>	<ul style="list-style-type: none"> <li>• No lateral Floats Instead sinks</li> </ul>	<ul style="list-style-type: none"> <li>• Cigar Shaped</li> <li>• No Lateral Floats</li> </ul>
Larva	<ul style="list-style-type: none"> <li>• Suspended in water with head Down</li> <li>• No Siphon Tube</li> </ul>	<ul style="list-style-type: none"> <li>• Float Horizontally on water surface</li> <li>• Long Siphon Tube</li> </ul>	<ul style="list-style-type: none"> <li>• Suspended in water with head Down</li> <li>• Short Siphon Tube</li> </ul>
Adult	<ul style="list-style-type: none"> <li>• While resting body shows Hunch Back.</li> <li>• Wings unspotted.</li> <li>• White strips on black body</li> <li>• Called as Tiger mosquito.</li> <li>• Identification of Biting Position</li> </ul>	<ul style="list-style-type: none"> <li>• While resting inclines at an angle to the surface.</li> <li>• Spotted wings</li> <li>• Palpi long in both sexes.</li> <li>• Identification of Biting Position</li> </ul>	<ul style="list-style-type: none"> <li>• While Resting body shows Hunch Back</li> <li>• Wings unspotted</li> <li>• Commonly called as Nuisance mosquito.</li> <li>• Identification of Biting Position</li> </ul>

Culex:



Anopheles:



Aedes :



In my Observation mostly resting habitats of these mosquitoes are of two types[10]:

1. Endophilia mosquitoes are present in the areas like Dark Corners, Upper walls, Behind Pictures and Under Furniture's.
2. Exophilia mosquitoes are present in the areas like Vegetation, Shrubs, Tree holes, Cattle sheds and wells.

**Experimental Results:**

Materials we consider to prevent, control, and reduce the mosquito growth. By experimenting with material called Jet Coils we observed in reduction of growth but we detected a problem which is harmful to humans by breathing them cause lung cancer. So, we halted that and proceeded with another experiment by considering a cream product called Odomos[11] . We considered for checking how much Prevention it can do and results ad Nice repellent with no Side effects included. We also found Odomos have N, N diethyl benzamide in less usage. We mostly preferred Environmental control where the breeding of mosquito places are reduced. To prevent most of the mosquitoes we can use

mosquito nets while sleeping whereas to reduce the mosquitoes we can promote the mosquito nets as insecticide treated mosquito nets. When we used sprays over mosquitoes to reduce its populations by both residual and fogging sprays. Mosquitoes are present inside the Dwellings, walls and other surfaces that serve as resting phases for mosquito referred as residual Spray. Here we identified a problem that residual sprays shows residual action so that the mosquito can resist themselves and population increases automatically. Fogging spray shows temporary action. So problem of Resistance is not seen by us. To experiment innovatively we used chemicals to control mosquito population. Chemicals used like Fenthion, Chloropyrifos, Abate, Temephos, DDT and HCH. Here we also found a problem that applying DDT and HCH mosquitoes can resist themselves because they show permanent action in water when compared to remaining.

#### Future Enhancement:

When considering all Biological options we noticed that only those options alone can't be used to control mosquitoes population every time. In addition Odomos have no Problems detected at the time of Experiment. So, using Odomos is very much useful in preventing Mosquitoes. Except DDT and HCH all the remaining chemicals can be used for controlling mosquito population in water.

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