

# A Study on the Spread of COVID-19 through Mosquitoes

Hina Nafees

Department of Medical

Teerthanker Mahaveer University, Moradabad, Uttar Pradesh, India

**ABSTRACT:** *COVID-19 is a Corona Virus Disease which spreads through the spread of the virus due to the cough or the sneezing of an infected person. Due the sneezing of the person the virus droplets spreads which in turn infects the respiratory tract of the human beings because Corona is a respiratory virus. In this paper the study has been focused on the spread of the virus through the mosquitos. To spread the virus, the virus must replicate itself in the blood of the mosquito so that when a mosquito bites a human being it will be injected into the blood of the infected person and further the respiratory tract of the human being. But such cases have not been so far that corona spreads through the mosquito and some studies has been cited that are based on the testing of the mosquito for the replication of the corona in the mosquito. This paper will help to understand that whether mosquitos are able to spread the corona virus or not and the cause behind the inability to spread the virus by the mosquitos.*

**KEYWORDS:** *Pandemic, COVID-19, Cough, Mosquito, Replication, Respiratory tract, Sneezing, Virus.*

## INTRODUCTION

### Spread of the diseases by the mosquitos

Mosquitos spread the pathogens by sucking the blood of the human beings which lead to the cause of the half a million of deaths and in hundreds of millions of critical illness. Mosquitos are the carriers of the number of diseases. Mosquitos can spread some of the diseases or they can act as the carrier for some of the diseases but cannot act as the carrier for some diseases.

### Cause/Need for the spread of the diseases by the mosquitos

For the development of the eggs, the female mosquitos need the nutrition in their blood to feed on the eggs. Due to which the virus take advantage of their biological requirement for their nutrition and thus the viruses move from the host to another host to spread themselves. A mosquito when feeds on or sucks the blood of an infected animal like kangaroo or a bird or it may be a human being. Through this technique the mosquitos spread a number of diseases like Ross River virus, yellow fever, Zika, dengue and chikungunya. Malaria can also be spread which is spread although by a parasite. But some viruses cannot be spread by the mosquitos like HIV and Ebola.

### Diseases not transmitted by the mosquitoes and the cause

Mosquitos themselves cannot get infected with the HIV because a mosquito cannot pick up the virus when it feeds on or bites an infected person due to the low amount of the HIV being

in circulation in the blood of the infected person or the animal. In case of testing for the Ebola virus, the researchers injected the virus into the mosquitoes but the result was negative and no mosquito got infected with the virus. Lakhs of insects were collected to check the spread of the virus through the injected mosquitoes but no virus was found in any of the insects.

### **Spread of the COVID-19 or Corona**

As per the disease control and the prevention center the virus gets transmitted between the persons when they are in close contact with other. So, it can be transmitted between the persons by any of the following contacts. Direct contact or close contact: whenever an infected person sneezes, breathes, coughs, talks or sings, tiny droplets of the saliva are produced which contains the virus of the disease. Now when these droplets come into contact with the mouth, nose, eyes or the lungs, the risk of getting the virus infection is very high or it can be said that the person is sure to get infected. Indirect Contact: when a person sneezes, coughs or breathes the tiny droplets settle on the surface of the objects and surface. Now a person touches such objects or the surface then his hands get infected with the virus and as he touches the nose, mouth or the eyes he got infected with the virus. But this method of infection is thought to be not as common as the direct contact method.

### **Spread of the infection among the mosquitos**

For the replication to happen among the mosquitoes there must be sufficient amount or level of the virus in the blood to ascertain the spread of the virus. As per a researcher Higgs, "for the mosquito to get infected there should be sufficient amount of virus in the blood of the mosquito". But it is also the fact that not all the types of the mosquitoes are prone to infection and it is also not very much known that some are more susceptible while some are resistant to the viruses [4]. For example, in case of dengue and yellow fever, the level of the virus in the blood reaches to such a level that they can spread the infection. Higgs mentioned the cases of the dengue and the chikungunya. These diseases are spread by the mosquito *Aedes Aegypti* which is prone to such infection while the *Anopheles* species are resistant to the spread of this virus or it can be said very truly that some viruses can affect only some of the mosquitoes while others are not affected by such viruses like Dengue can infect the *Aedes* but not the *Culex*

### **Experiments or the study of the spread of the COVID-19 through the mosquitoes**

For the study three common and easily available species of the mosquitoes were selected which are *Culex quinquefasciatus*, *Aedes Aegypti* and *Aedes Albopictus*. The very first 2 species are the carriers for the dengue, yellow fever, chikungunya and the Zika fever. *Culex quinquefasciatus* spreads the viruses that leads to the cause of lymphatic filariasis which is a parasitic infection although. It is caused by small size worms which enters the lymph system of the human being and thus causes the swelling in the body organs. Lymph system is responsible for maintaining the body's fluid balance and also fights for the infections. This disease also makes the skin harder and thick. Such parasites also cause some kinds of encephalitis. For this study the experiments were conducted. The first prime condition to get

infection is that the mosquito must feed on the infected blood to contain the virus inside the mosquito blood. But for the experimentation purpose the mosquitoes were knowingly fed with the infected blood as per the researcher Higgs because to test the mosquitoes in the extreme conditions it was very much required to be done. Even then the virus did not grow up which indicated that even if a mosquito fed on the person the mosquito would not get infected, Higgs said.

In a study to make the mosquito spread the virus the mosquito was infected with the virus and virus was also made to pass through its gut and enter the salivary glands of the mosquito. So, in June 2020 researchers injected the strand of the SARS in the isolated cells of the common Aedes mosquito [1]. But it was found that the virus was not able to multiply itself in the cells of the mosquito. Now for the same research to check the result of the mosquitoes infected ones 1165 mosquitoes were trapped from around the Chinese city and it was found that all the collected samples of the mosquitoes were tested negative. The first experimental study for the research on the potential of the mosquitoes was published in July 2020 which has been stated above in which three types of mosquitoes were injected with the SARS.

### **Preventive measures for the COVID-19**

It may be difficult to prevent oneself from being exposed to the virus but some preventive measures can be taken to protect from the virus. A gap should be maintained from the people who sneezes or coughs. As per the guidelines of the WHO there should be 3 feet gap from the sick people or in general from all the people. But for the complete safe side a gap of 6 feet is always suggested so that whenever someone sneezes the droplets should be in reach of you. Washing hands for at-least 20 seconds with soap and water is recommended. Alcohol based sanitizer can be used in case of soap and water is not available but the sanitizer should contain at-least 60% alcohol. Touching the face should be avoided because it may lead to the transmission of the virus to the eyes, nose and the mouth. Try to stay inside the home if possible to avoid unwanted contacts with the people because too many contacts may spread the virus. Face mask should be worn by the people to avoid the direct transfer of the virus through sneezing or coughing of the people around and also to prevent the touching of the mouth and the nose.

### **CONCLUSION**

Although the virus cannot be transmitted by the mosquitoes which are always the carrier of the most of the dangerous viruses like Zika virus, eastern encephalitis, chikungunya, dengue, lymphatic flaviriasis, California encephalitis, malaria fever virus plasmodium that becomes serious cause of the number of diseases spread among the human beings. COVID-19 is a very dangerous respiratory tract disease and till date there is no availability of the medicine so all the precautionary measures must be taken to avoid the contact with the infected persons. Spread of the virus not only affects the human beings on their health only, it also affects the economic aspects of a country. As during the outbreak of the COVID-19 a lot of businesses were affected

by the disease. Small businesses were the major affected ones. It changed the lifestyle of the people of the country.

### REFERENCES

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