**Why you REALLY shouldn't scratch a mosquito bite: Inflammation from itching 'helps viruses like Zika spread around the body'**

* **Scientists studied bites of the Zika-spreading Aedes aegypti mosquito**
* **Mosquito saliva triggers immune response from white blood cells**
* **But some white blood cells get infected and inadvertently replicate virus**
* **Anti-inflammatory drugs and creams 'could stop symptoms setting in'**

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**PUBLISHED:** 17:00, 21 June 2016 | **UPDATED:** 19:36, 21 June 2016

It is advice that is easier to give than follow - but itching a mosquito bite will make it much worse, scientists have found.

When we itch a bite, viral infections are more likely to spread around our body – and potentially cause a severe illness.

It seems that dangerous infections such as Zika, which causes babies brains not to develop properly in the womb, and dengue fever are aided by inflammation.

Research by the University of Leeds, found inflammation where the insect has bitten not only helps a virus establish an infection quicker, it also helps it to spread around the body, increasing the likelihood of a severe illness.

Dr Clive McKimmie, a research fellow at the School of Medicine and senior author of the study said: ‘Mosquito bites are not just annoying - they are key for how these viruses spread around your body and cause disease.

‘We now want to look at whether medications such as anti-inflammatory creams can stop the virus establishing an infection if used quickly enough after the bite inflammation appears.’

In the new research, the investigators used mice to study the bites of the Yellow fever mosquito, the species which spreads infections such as Zika, dengue and Chikungunya.

When a mosquito bites, it injects saliva into the skin. The saliva triggers an immune response in which white blood cells, called neutrophils and myeloid, rush to the site.

But instead of helping, some of these cells get infected and inadvertently replicate the virus, researchers found.

The team injected viruses similar to Chikungunya into the skin of mice with and without the presence of a mosquito bite at the injection site and compared the reaction.

In the absence of mosquito bites and their accompanying inflammation, the viruses failed to replicate well, whereas the presence of a bite resulted in a high virus level in the skin.

‘This was a big surprise we didn't expect,’ said Dr McKimmie, whose team worked alongside colleagues at the University of Glasgow.

‘These viruses are not known for infecting immune cells.

‘And sure enough, when we stopped these immune cells coming in, the bite did not enhance the infection anymore.’

Despite the enormous disease burden of mosquito-borne viral infections - they are responsible for hundreds of millions of cases across the world - there are few specific therapies or vaccines.

‘This research could be the first step in repurposing commonly available anti-inflammatory drugs to treat bite inflammation before any symptoms set in,' said Dr McKimmie, whose study was funded by the Medical Research Council.

‘We think creams might act as an effective way to stop these viruses before they can cause disease.’

He added that if it is proven to be effective, this approach could work against a multitude of other viruses.

‘Nobody expected Zika, and before that nobody expected Chikungunya,’ he said.

‘There are estimated to be hundreds of other mosquito-borne viruses out there and it's hard to predict what's going to start the next outbreak.’

The article was published in the journal Immunity.