

# Nipah Virus Outbreak in India

Rabia Hussain<sup>1</sup>, Mohamed Azmi Hassali<sup>1</sup>, Isha Patel<sup>2,\*</sup>

<sup>1</sup>School of Pharmaceutical Sciences, Universiti Sains Malaysia, Penang, MALAYSIA.

<sup>2</sup>Department of Pharmacy Practice, Administration and Research, Marshall University School of Pharmacy (MUSOP), One John Marshall Drive, Huntington, WV, USA.

The notorious Nipah virus is again in action in India and in May 2018 it has took 19 lives in Indian states named Kerala and Karnataka.<sup>1</sup> A total of 19 cases have been reported to be under treatment for the virus.<sup>1</sup> The situation has raised a concern among general population and healthcare officials in India<sup>2</sup> and many countries, such as Bahrain and United Arab Emirates has issued a travel advisory to its nationals to avoid visit to infected areas.<sup>3</sup> The virus in India is linked to fruit bats from family *Pteropodidae*, which are commonly known as flying foxes in India and are a major source of infection in both animals and humans.<sup>4</sup> A Nipah viral outbreak was previously seen in Bangladesh in 2013-2014,<sup>4</sup> where the villagers drank palm tree sap and got sick.<sup>5</sup> Upon investigation, it was found out that the palm tree sap (a national delicacy of Bangladesh) was contaminated by the urine and saliva of bats that contaminated the sap during nighttime. The villagers left pots uncovered at night for sap collection.<sup>5</sup>

In order to respond to the endemic situation and to treat the Nipah infection, Indian Council of Medical Research (ICMR) has written to the Australian government to share monoclonal antibodies developed by Australian researchers, so the vaccine can be tested on humans due to its *in-vitro* effectiveness against Nipah virus.<sup>6</sup> An antiviral drug, Ribavirin, was employed for the symptomatic treatment of Nipah infection in Malaysia, back in 1999 and in 2007, the same drug was given to the 30 patients down with fever in some parts of West Bengal. The drug is perceived to alleviate the symptoms of convulsions, nausea and vomiting.<sup>7</sup> A study by Chong *et al.* discusses a possible relationship between

Henipaviruses and fruit bats.<sup>8</sup> The Nipah infection spread is evident from the various casualties in Kerala and Karnataka, where the route of virus spread was not only from animals to humans but also from humans to other humans.<sup>9</sup> As bats are the most abundantly found mammals, they aggregate in large numbers upto 3000/m<sup>2</sup>. Also, bats have capacity to fly long distances and some of them can travel upto a distance of 640 km. They are also involved with the exchange of novel viruses with their non-migratory species and other animals.<sup>10</sup>

Controlling diseases related to zoonotic organisms is particularly important in developing countries, where the burden of such diseases is 130 times more than in developed countries.<sup>8</sup> Deforestation and urbanization might be the factors that may have resulted in the shortage of resources for the bats population to migrate from their natural habitats to the agricultural lands. In Uganda, the risk of malaria, leishmaniasis, yellow fever and hantavirus increased by the conversion of swamp lands into cropland.<sup>5</sup> To date, there is no treatment available for Nipah virus and it is listed in World Health Organization Research and Development blueprint list as the pathogen that needs urgent research and development action.<sup>11</sup> WHO in collaboration with Center for Infectious Disease Research and Policy (CIDRAP) at the University of Minnesota, with support from the Wellcome Trust has started to facilitate collaborative efforts towards the development of “Nipah Research and Development Roadmap”. This collaboration, involving key stakeholders and other experts in the field, both at national and international level, is meant to develop

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Address for correspondence:

Isha Patel, Ph.D

Department of Pharmacy Practice, Administration and Research, Marshall University School of Pharmacy (MUSOP), One John Marshall Drive, Huntington, WV- 25755, USA.

Phone no: +1 304 696 7349

email id: pateli@marshall.edu



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countermeasures including diagnostic, preventive and therapeutic to help eradicate Nipah.<sup>11</sup> Similarly, to develop a vaccine against Nipah, a 25 million dollar grant has been awarded to two US-based companies, Profectus BioSciences and Emergent BioSolutions by the Coalition for Epidemic Preparedness and Innovations.<sup>12</sup> Strong regulatory guidelines should be implemented, when there is any kind of interaction involved with livestock animals. Planting of fruit trees within livestock farms which may attract bats or other type of wildlife into farms, should be avoided.<sup>13</sup> Further, change in landscape should be carried out cautiously.<sup>5</sup> Government support is extremely important in effectively controlling outbreaks. Assessment of the severity of the disease and spread is vital and it is the responsibility of trained professionals such as doctors or researchers to create awareness among the general public. Conflicting information can compromise the effective measures to control an outbreak.<sup>13</sup> The prevalence of Nipah virus in bats has proposed that there is a very strong likelihood of more outbreaks in future in Asia. So, cooperation between Asian countries is important to prevent the spread of infection and a vigilant surveillance based system is the need of the hour to combat such outbreaks.<sup>1</sup>

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