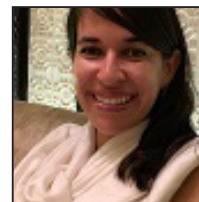


Preventing ZIKV-induced microcephaly: The pros and cons of classic and newly developed drugs

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Abstract

During the Zika virus (ZIKV) outbreak in Brazil (2015-2016), more than 4,500 cases of newborns exhibiting microcephaly have emerged. Soon after that, the relationship between ZIKV and microcephaly was clarified, as it was shown that the virus was present in the brain of microcephalic fetuses. Moreover, studies published by our group show that ZIKV is able to infect and rapidly multiply in murine neurons, triggering the release of glutamate and inflammatory cytokines. Interestingly, blockade of the glutamate receptor, N-methyl-D-aspartate receptor (NMDAR), with memantine prevents ZIKV-induced neuroinflammation and neurodegeneration both in vitro and in vivo. Memantine has been used for several years to treat patients and is considered safe by the Food and Drug Administration (FDA) to treat pregnant women (Pregnancy drug category B). However, virus replication was not affected by memantine. Interestingly, a newly developed antiviral drug was also tested by our group, showing very promising results in terms of decreasing ZIKV replication. Although this antiviral drug could be an interesting therapeutic option, there are several difficulties for the conduction of clinical trial studies to test new drugs to treat pregnant women and their fetuses. Therefore, drug repositioning, as it is the case of memantine, could be a safer option. We propose that antiviral and neuroprotective drugs, in combination or separately, could be an effective therapeutic strategy to prevent ZIKV-induced congenital syndrome. Currently, we are testing these drugs in an embryonic mouse model of ZIKV infection



Biography

Fabiola Ribero has a Bachelor degree in Pharmacy (Universidade Federal de Ouro Preto, 2000), a MSc and a PhD degrees in Biochemistry and Immunology (Universidade Federal de Minas Gerais, 2001 and 2005, respectively). In the same year, following her PhD studies completion, she started a post-doctorate studies at the University of Western Ontario in Canada, where she stayed until 2010. Afterwards, she returned to Universidade Federal de Minas Gerais (UFMG) to become a faculty member as Assistant Professor at the Department of Biochemistry and Immunology. Dr. Fabiola Ribeiro's research focuses mainly on investigating cellular and molecular neurobiochemical mechanisms inherent to Huntington's disease and Alzheimer's disease. Recently, she opened new research lines encompassing the neuroimmunomodulatory aspects of Schizophrenia and Zika virus infection effects into brain tissue.

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