Finding a Cure for Zika: Antiviral Effects of PI3 Kinase Inhibitors

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Zika virus infection can cause fever, rash, conjunctivitis, and joint pain, which typically last up to 1 to 2 weeks, but can also lead to severe diseases such as Guillain-Barre syndrome (GBS), and birth defects to the brain, such as microcephaly. Since its outbreak in Brazil last year, Zika virus has infected hundreds of thousands and perhaps millions of people, and it has since spread to approximately 73 countries. However, no anti-Zika drug is currently available. In this study, Wortmannin and LY294002, two phosphoinositide-3 kinase (PI3K) inhibitors, which have been tested previously for anti-cancer activity, were tested for anti-Zika activity in cell culture. Vero cells were infected with Zika virus and treated with various concentrations of Wortmannin or LY294002 for 48 hours. Culture medium was then collected for determining virus titer by plaque assay. It was found that treatment of cells with LY294002 at concentrations ranging from 100 to 0.78 μM significantly inhibited virus replication as compared to the control treated with DMSO ($P<0.05$). In contrast, Wortmannin exhibited significant anti-Zika virus activity only at concentrations above 6.25 μM ($P<0.05$). These results indicate that both Wortmannin and LY294002 have anti-Zika virus activity and that LY294002 is more effective against Zika virus.

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