

Abstract

# Teicoplanin Derivatives Impact on West Nile Virus Pathogenesis <sup>†</sup>

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**Abstract:** West Nile virus (WNV) is an emerging arbovirus that causes infections worldwide. Clinical manifestations of the infection vary from asymptomatic to fatal illness when it reaches the central nervous system. To date, vaccine and specific antiviral treatments are not available. Teicoplanin is already used to treat Gram-positive bacterial infections. Furthermore, it has been reported to block the entry of pseudotyped Ebola, Middle East respiratory syndrome coronavirus and severe acute respiratory syndrome coronavirus. Moreover, teicoplanin derivatives showed anti-influenza virus, anti-human immunodeficiency virus, anti-hepatitis C virus, and anti-dengue virus activity. In total, 12 teicoplanin derivatives have been tested against our West Nile virus isolate. Vero E6 cells were simultaneously treated with 50  $\mu$ M of teicoplanin derivatives and infected with WNV at the same time. Virus-induced cytopathic effect and cytotoxicity were examined 4 days post-infection. One compound completely blocked virus pathogenesis, while five compounds reduced the viral titer. Further studies will be conducted to unravel the mode of action of these promising derivatives.

**Keywords:** antiviral; flavivirus; cytopathic effect; glycopeptide antibiotic derivative



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