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Secreted NS1 Aids in Dengue Virus Entry by Binding Heparan Sulfate

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ABSTRACT

A large portion of the world's population lives in an area where they are at risk of contracting Dengue Virus (DENV). While infection with DENV can result in a wide range of clinical manifestations, from flu-like symptoms to hemorrhagic shock, vascular leakage, and even death, no treatments currently exist. Previous studies have shown that higher levels of viral non-structural protein 1 (NS1) in the blood of infected patients correlate with more severe disease. NS1 has been shown to play many roles in the viral lifecycle, but the mechanisms by which NS1 executes these functions are unknown. Preliminary data from our lab suggest that NS1 facilitates DENV entrance into the cell, and previous studies have shown that secreted NS1 binds to heparan sulfate on the surface of cells. In this study a region of NS1 was identified that may be important for binding the cell surface through interactions with heparan sulfate and thus mediating virus entry. A mutagenic approach was used to investigate the role of this region of NS1 in cell binding and virus entry. This study seeks to better understand the mechanism by which NS1 binds the cell surface and aids in virus entry to identify antiviral targets.

KEYWORDS

Dengue Virus, NS1, Human Pathogen, Cell Binding, Virus Entry