Poster

Cell adhesion molecules (integrins) modulate Flavivirus infection in mouse cell lines

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To infect the host cells, viruses must interact with a broad range of molecules which includes their cellular receptors and molecules that support virus replication. Flaviviruses like Dengue, West Nile, Usutu, Yellow fever and Zika virus have caused recent outbreaks around the world. Up to now, few molecules were characterized as Flavivirus receptor(s) or able to modulate flavivirus infection. Integrins are a family of transmembrane proteins expressed in many cell types with important functions like cell migration, attachment, mitoses and apoptosis. Previous studies postulated that West Nile virus uses integrin to enter into the cells and further studies from our group showed that integrins modulate West Nile virus infection. In order to elucidate if integrins are involved in Flavivirus infection we infected integrin deficient mouse fibroblasts and CHO cells, a flavivirus resistant cell line, with different Flaviviruses. In these sets of experiments we evaluated: (i) virus binding; (ii) replication kinetics; (iii) internalization and (iv) replication. Our results show that integrins are not the main flavivirus receptor and its expression in CHO cells did not confer Flavivirus permissiveness. Also, integrins are not involved in Flavivirus binding neither internalization into the cell. Replication was slightly impaired in cells deficient for β1 and β3 integrin subunits and strongly impaired in αVβ3 integrin deficient cells. In summary, integrins are not involved in the first steps of Flavivirus infection (binding and internalization) but somehow integrins modulate Flavivirus replication. The exact mechanism how integrins modulate flavivirus replication is unknown and subject of investigation.

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