



Delivery of antibody into cells by oxidized carbon nanoparticles and its application in dengue virus neutralization

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Dengue fever is a painful, debilitating mosquito-borne tropical disease caused by any one of the four dengue viruses (DENV), DENV-1, DENV-2, DENV-3 and DENV-4. Although the human monoclonal antibodies (HuMAbs) that can neutralize all four serotypes of dengue viruses have been developed, the neutralization can be effective only on viruses that are extracellular. This is because antibody cannot automatically enter cells. Hence, oxidized carbon nanoparticles (OCN) were investigated to help delivery of HuMAbs into cells. The OCN was synthesized by modified Hummers and Offeman method and characterized by spectroscopic analyses, whilst their shape and size were also verified. The ability of OCN to aid the HuMAbs neutralization of dengue viruses was evaluated by the focus reduction test. In addition, the ability of OCN to bring HuMAbs into cells was verified by confocal laser scanning microscopy (CLSM).

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