

SERUM-FREE MEDIA FOR PROPAGATION OF DENGUE TYPE 2 VIRUS IN VERO CELLS

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Abstract. Dengue is a widely distributed epidemic disease caused by dengue virus, of which there are four serotypes. Development of a tetravalent live-attenuated vaccine has an inherent problem arising from a risk of developing severe dengue following infection of vaccinated individuals displaying seronegativity to the dengue virus, and thus, an alternative vaccination strategy, such as an inactivated virus vaccine, is preferred. As a means towards realizing the latter goal, effect of serum-free (SF) media on growth of dengue virus in Vero cells was investigated by comparing Dengue type 2 virus (DENV-2) yield and protein expression in Vero cells cultured in five types of SF media, namely, BMPro, OptiPro, ProVero, Stem- α , and VP-SFM, and in minimal essential medium supplemented with 2% fetal bovine serum (MEM-2%FBS). BMPro, OptiPro and ProVero sustained higher dengue virus titers than Stem- α , VP-SFM or MEM-2%FBS. No mutations in E gene nucleotide sequences of DENV-2 propagated in OptiPro, VP-SFM or MEM-2%FBS. DENV-2 E protein in Vero cells cultured in OptiPro and ProVero was expressed in higher amounts compared to that in cells cultured in VP-SFM. Taken together, these findings suggest among the five SF media tested, BMPro, OptiPro and ProVero supported more efficient growth of DENV-2. SF media are advantageous in propagating viruses for development of an inactivated dengue virus vaccine.

Keywords: dengue virus, inactivated viral vaccine, serum-free media, Vero cell

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