EXPRESSION OF RECOMBINANT DENGUE VIRAL PROTEINS USING
BACULOVIRUS EXPRESSION INSECT CELL SYSTEM

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Baculovirus has been known to be one of the most powerful and versatile eukaryote
expression vector system available. It is a helper virus-independent system which has been used to
express many proteins from different sources. High level of protein production and post-
translational modifications of recombinant proteins can be obtained using insect cells as hosts for
baculovirus replication. Dengue viruses are endemic in most tropical countries and a major cause of
paediatric morbidity and motarity. This work is aimed to produce recombinant Dengue viral coat
proteins for the development of a more efficient and conveniently used diagnostic kit for Dengue
viral detection. Non-structural protein1 (NS1) and envelope protein (E) of Dengue virus
(serotype-2) have been successfully expressed using the baculovirus expression insect cell system.
NS1 and E genes were separately inserted into baculovirus transfer vectors and each introduced into
a special Escherichia coli strain containing a baculovirus shuttle vector (Bacmid) that can replicate
in E.coli as a plasmid. The bacmid containing NS1 or E gene were amplified in E.coli and purified
from total bacterial DNA then used to transfect into insect cells (SF-9 cells). During transfection,
recombinant baculovirus particles were formed and released to infect into neighboring insect cells to
produce recombinant NS1 or E protein. Western blot analysis was performed using anti-NS1 or
anti-E antibody for the detection of recombinant NS1 and recombinant E protein.