

SUMMARY

Infection of Singh's Aedes albopictus (Aa1) cell line with dengue virus type 2 (DEN-2) strain New Guinea C was found to be CPE-negative and to result in the recovery of exclusively mature virus particles or rapidly sedimenting hemagglutinin (RHA) in sucrose gradient analysis. This DEN-2 (Aa1)/RHA was compared with the products of mammalian cell infection [DEN-2 (MK2)/RHA] and Aa1 carrier culture (CHA) by polyacrylamide gel electrophoresis. The polypeptides of DEN-2 (Aa1)/RHA and CHA are hereby characterized for the first time.

Co-electropherograms show that:

(1) dengue virions in both insect and vertebrate cell cultures possess four structural protein components, three of which have been previously described in Group B arbovirus-vertebrate cell systems, namely (a) the large, envelope protein, V3, (b) the nucleocapsid protein, V2, and (c) the small envelope protein, V1. A fourth polypeptide, hitherto unrecognized, and designated V4, appears consistently in all sucrose gradient fractions; it is apparently complexed to V3, and is divisible into a minor 4a and a major 4b peak.

(2) the polypeptides of variously derived RHA undergo qualitative and/or quantitative changes in electrophoretic behavior accordingly, i.e., DEN-2 (MK2) < DEN-2 (Aa1) < CHA.

Challenge virus resistance/neutralization tests (CVR/NT) confirm:

(1) the ability of products from chronically infected Aal cultures (CHA) to mitigate morbidity and/or mortality in mammalian cell culture and Swiss (albino) mice following challenge with lethal virus.

(2) the antigenic relatedness and/or identity of CHA to dengue-2 virus.

The foregoing changes in virion surface antigens, as such representing host-derived modification, substantiate previously observed alterations in biological and immunological properties of DEN-2 in persistently infected Aal cells. The implications of these findings on the possible behavior of virus in arthropodan and vertebrate hosts, for that matter, disease causation and/or induction of immunity in man, deserve further consideration.

BIOGRAPHY

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