

TEM characterization of Banana Streak Virus (BSV) from local 'Embul' banana (Mysore, AAB) and development of an ELISA identification kit

Banana Streak Virus (BSV) a bacilliform dsDNA (7.4 kb) virion, has a worldwide distribution, while some banana genomes have integrated viral sequences with the ability to produce virions. Diagnostic methods are mainly available for detection of encapsidated episomal form of the virus, although, high serological variability makes its detection difficult. Studies on the morphology of the BSV infecting local banana 'Embul' (Mysore, AAB) type, and development of an ELISA kit for its detection using polyclonal antibodies previously produced for a mixture of BSV isolates are reported here. Level of disease symptoms was investigated in various banana-growing areas. Locally developed DAS ELISA kit gave positive results for plants having symptoms. BSV from local "Embul" banana was purified by a CsCl-Sucrose density gradient centrifugation and the fractions were analyzed by UV absorbance. BSV preparations had a characteristic nucleoprotein UV absorption spectrum. The virus was characterized by Immunosorbent electron microscopy (ISEM), where virus was trapped onto EM grids by its homologous antibody (IgG). BSV isolated from 'Embul' was characterized as rod shaped

particles measuring 135.5 ± 0.9 nm x 28.9 ± 0.3 nm [\pm SE] (Fig 1). Efficiency of the new ELISA kit was compared with the commercial (Agdia, USA) kit using local 'Embul' plants. The local kit was found to be more efficient and low cost compared to commercial kit (higher IgG/ 1:1000 and IgG-Alkaline phosphatase (AP) enzyme conjugate/ 1:500 dilutions compared to 1:200 in commercial kit) for BSV detection. In addition, it was noted that local standardized kit was more reliable and reproducible compared to commercial kit. Although, a more sensitive direct detection method for BSV is ISEM since it revealed the presence of BSV particles in partially purified extracts even from symptomless plants, which were negative for DAS ELISA. Use of both ISEM and DAS-ELISA for detection of the virus should provide better diagnosis at BSV strain level, as there are significant variations among different BSV isolates