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"Development of an ELISA to a Rhabdovirus of soybeans."

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Abstract

A rhabdovirus-associated disease of soybeans, reported for the first time in 1993 was shown to be of economic consequence in South Africa in earlier studies. As this disease appears to be unique to South Africa, the virus probably new, and yield losses significant, studies are required locally to identify and characterise the virus unambiguously and to determine aspects of the virus epidemiology (alternate hosts, method of transmission, vectors). This is essential in order to implement control measures. A prerequisite to such studies however is the development of a assay to rapidly and accurately detect the virus in infected plants and vectors. ELISA is considered an ideal technique for this but must be based on a good quality antiserum. The aim of this study was to develop an ELISA detection system to the rhabdovirus. In order to achieve this objective, the following critical aspects needed to be resolved; it was essential that the virus be maintained and propagated to adequate levels, from which sufficient highly purified virus could be obtained for an immunisation schedule. While an alternate host to soybean, namely *Nicotiana benthamiana* was identified as a more suitable host for virus propagation due to greater reliability of virus mechanical transmission, virus levels in this host were relatively low and it did not produce symptoms. It was shown that under controlled growth room conditions virus levels were highest in young leaves of this plant between six and 10 weeks after inoculation. Using such virus infected material, extraction, clarification and concentration steps of a general rhabdovirus purification procedure were modified in order to obtain sufficient highly-purified virus preparations. Two, large scale purifications using this procedure whoever did not yield sufficient virus for immunization of a rabbit. It is recommended that further studies be performed to obtain higher starting concentrations of virus, or alternatively that monoclonal antibodies be produced from partially purified virus.