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Diagnostic methods for african horsesickness virus using monoclonal antibodies to structural and non-structural proteins

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ABSTRACT

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A panel of 32 hybridoma cell lines secreting monoclonal antibodies (MAbs) reactive with African horsesickness virus serotype 4 (AHSV-4) has been developed. Four of the MAbs recognized the major core antigen VP7, twenty recognized the outer capsid protein VP2 and eight reacted with the non-structural protein NS1. With the VP7-specific MAbs a rapid and sensitive double antibody sandwich immunoassay has been developed to detect viral antigen in infected Vero cells and in spleen tissue from AHSV-infected horses. The sensitivity of the assay is 10 ng viral antigen per 100 μl. The NS1-specific MAbs allowed visualization by immunofluorescence of tubulc-like structures in the cytoplasm of infected Vero cells. This can be very useful as a confirmatory diagnostic procedure. The antigenic map of the outer capsid VP2 protein with MAbs is also reported.

INTRODUCTION

African horse sickness (AHS) is an arthropod-borne disease of Equidae, caused by a dsRNA orbivirus (AHSV) of the Reoviridae Family (Verwoerd et al, 1979). The infection of horses is characterized by a high mortality. The disease is endemic in central Africa, although outbreaks have occurred in North Africa and Southern Europe (Spain and Portugal) in recent years (1987–1991). Only one serotype, AHSV-4, has been isolated in Spain and Portugal during these outbreaks. The virus has a genome consisting of 10 segments of double-stranded RNA (Oellerman et al, 1970), each of which encodes at least one polypeptide. There are seven structural proteins, which form

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