HIGHLY SENSITIVE ANTIGEN DETECTION PROCEDURES FOR THE DIAGNOSIS OF INFECTIOUS BOVINE RHINOTRACHEITIS: AMPLIFIED ELISA AND REVERSE PASSIVE HAEMAGGLUTINATION

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(Accepted for publication 27 March 1986)

ABSTRACT


The sensitivity of an enzyme-linked immunosorbent assay (ELISA) for the detection of bovid herpesvirus 1 antigen was increased by up to 50-fold using the biotin-avidin interaction to amplify the reaction, when compared with a simple sandwich ELISA. An alternative immunoassay, reverse passive haemagglutination (RPHA), had a similar sensitivity to the amplified ELISA, and was technically simpler to perform. Both the amplified ELISA and the RPHA could detect viral antigen in the nasal secretions of calves undergoing experimental primary infection with the virus from Day 3 to Day 7 after inoculation. Neither assay was as sensitive as virus isolation in cell culture and they failed to detect antigen in virus-positive samples from the calves from 8 days after inoculation, and from vaccinated calves undergoing challenge infection.

INTRODUCTION

The specific diagnosis of infectious bovine rhinotracheitis (IBR) has traditionally been based on the isolation of the causal virus (bovid herpesvirus 1; BHV1) in cell culture, together with the detection of an active antibody response in the host animal (Gibbs and Rweyemamu, 1977). The detection of viral antigen in clinical samples can be a rapid and economical alternative to cell culture. The most widely applied antigen detection technique has been immunofluorescence, either on smears of cells from the nasal or ocular epithelium (Terpstra, 1979; Nettleton et al., 1983; Silim and Elazhary, 1983) or on cryostat sections of tissues collected at post mortem (Terpstra, 1979). Immunoenzymatic techniques have been described for the labelling of infected cells (Edwards et al., 1983) and for

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