A FOETAL GOAT TONGUE CELL LINE FOUND HIGHLY SENSITIVE FOR FOOT-AND-MOUTH DISEASE VIRUS

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INTRODUCTION

While infectious FMDV usually is present with high titres in fresh vesicular material, titres found in sera, nasal swabs, saliva and oropharyngeal samples (probang) are much lower, necessitating highly sensitive detection systems. The most sensitive cells for FMD virus isolation are primary bovine thyroid (BTY) cells, but they can’t be passaged or frozen without impairing their sensitivity. Ensuring that there is always a fresh and suitable batch of primary BTY cells available for diagnostic purposes is quite laborious and expensive. Therefore, most diagnostic laboratories use other cells which are more convenient to handle, either cells of bovine, ovine or porcine origin or permanent cell lines as BHK-21 or IBRS-2. These protocols do not facilitate a reliable overnight detection of virus.

MATERIALS AND METHODS

A foetal goat tongue cell line (ZZ-R 127) was supplied by the CCLV (Collection of Cell Lines in Veterinary Medicine) of the FLI and was inoculated with cell culture virus as well as with virus originating from vesicular material.

RESULTS

FMDV infection could always be detected visually within 18-24 hours. Strains representing all seven serotypes of FMDV could be isolated on ZZ-R 127 cells with a higher sensitivity than in BHK-21/CT or IBRS-2 cells. Furthermore, the CPE was consistently observed in the first passage in ZZ-R 127 cells and also earlier than in BHK-21 and IBRS-2 cells, in which the detection of low amounts of FMDV often takes several days and may even require several passages. The foetal goat tongue cell line maintains its sensitivity for FMDV at least from the 76th to the 160th passage.

DISCUSSION

A foetal goat tongue cell line was found to be a sensitive, rapid and convenient tool for the isolation of foot-and-mouth-disease virus (FMDV) with significant advantages over established permanent cell lines. It is recommended that the new cell line is introduced into diagnostic laboratories to improve FMD isolation.