Modulation of Cytokine mRNA Expression in Pharyngeal Epithelial Samples obtained from Cattle Infected with Foot-and-Mouth Disease Virus

A novel technique of endoscopical collection of small tissue samples was used to obtain sequential tissue samples from the dorsal soft palate (DSP) of individual cattle infected with foot-and-mouth disease virus (FMDV) at different phases of the infection. Levels of mRNA encoding interferon (IFN)-α and IFN-β as well as tumour necrosis factor (TNF)-α were measured in these samples by quantitative reverse transcriptase polymerase chain reaction. Expression of IFN-β mRNA was significantly down-regulated in the biopsy samples harvested during the acute phase of infection, while there was no statistically significant effect on the expression of IFN-α mRNA compared with baseline levels. In contrast, the mRNA encoding TNF-α was significantly up-regulated in samples collected during both acute and late (>28 days post infection) phases of infection. There were also significantly higher levels of TNF-α mRNA expressed in samples derived from animals that were identified subsequently as persistently infected FMDV-carriers. It was concluded that there was a significant difference in the host-response in the DSP of calves that were identified as persistently infected, subclinical carriers of FMDV.

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